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Environmentalism in the Light of Menger and Mises

George Reisman

I

The two essential claims of the environmentalists, which I take for granted are already well known, are (1) that continued economic progress is impossible because of the impending exhaustion of natural resources (it is from this notion that the slogan "reduce, reuse, recycle" comes), and (2) that continued economic progress, indeed, much of the economic progress that we have had up to now, is destructive of the environment and is therefore dangerous. The essential policy prescription of the environmentalists is the prohibition of self-interested individual action insofar as the byproduct of such action when performed on a mass basis is alleged damage to the environment. The leading concrete example of this policy prescription is the attempt now under way to force individuals to give up such things as their automobiles and air conditioners on the grounds that the byproduct of hundreds of millions or billions of people operating such devices is to cause global warming. And this same example, of course, is presently the leading example of the alleged dangers of economic progress.

The basis of my critique of the essential claims of the environmentalists is Carl Menger's theory of goods. The basis of my critique of their essential policy prescription is the spirit of individualism that runs throughout the writings of Ludwig von Mises.

George Reisman is professor of economics at Pepperdine University. He is the author of *Capitalism: A Treatise on Economics* (Ottawa, Ill.: Jameson Books, 1996) and is the translator of Ludwig von Mises's *Epistemological Problems of Economics* (New York: D. Van Nostrand, 1960). His Web site is www.capitalism.net. This article is from the Mises Memorial Lecture delivered at the 2001 Austrian Scholars Conference.

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In his *Principles of Economics*, Menger (1950) develops two aspects of his theory of goods that are highly relevant to the critique of the environmentalists' two essential claims. The first aspect is his recognition that what makes what would otherwise be mere things into goods is not the intrinsic properties of the things *but a man-made relationship* between the physical properties of the things and the satisfaction of human needs or wants. Menger describes four prerequisites, all of which must be simultaneously present, in order for a thing to become a good, or, as he often puts it, have "goods-character."

He writes:

> If a thing is to become a good, or in other words, if it is to acquire goods-character, all four of the following prerequisites must be simultaneously present:
>
> 1. A human need.
> 2. Such properties as render the thing capable of being brought into a causal connection with the satisfaction of this need.
> 3. Human knowledge of this causal connection.
> 4. Command of the thing sufficient to direct it to the satisfaction of the need. (p. 52)

The last two of these prerequisites, it must be stressed, are *man-made*. Human knowledge of the causal connection between external material things and the satisfaction of human needs must be discovered by man. And command over external material things sufficient to direct them to the satisfaction of human needs must be established by man. For the most part, it is established by means of a process of capital accumulation and a rising productivity of labor.

All this has immediate bearing on the subject of natural resources. It implies that the resources provided by nature, such as iron, aluminum, coal, petroleum and so on, are by no means automatically goods. Their goods-character must be created by man, by discovering knowledge of their respective properties that enable them to satisfy human needs, and then by establishing command over them sufficient to direct them to the satisfaction of human needs.

For example, iron, which has been present in the earth since the formation of the planet and throughout the entire presence of man on earth, did not become a good until well after the Stone Age had ended. Petroleum, which has been present in the ground for millions of years, did not become a good until the middle of the nineteenth century, when uses for it were discovered. Aluminum, radium, and uranium also became goods only within the last century or century and a half.

An example concerning goods-character being created only after the establishment of command sufficient to direct the resource provided by nature to the satisfaction of a human need would be the case of petroleum deposits lying deeper than existing drilling equipment could go. As drilling equipment improved, command was established over deposits lying at greater and greater

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depths. Those deposits, to the extent that they were known, then became goods, which they had not been before. Similarly, for some years after the creation of the goods-character of petroleum, those petroleum deposits containing a significant sulfur content were unuseable for the production of petroleum products and were therefore not goods. Their goods-character was created only when Rockefeller and Standard Oil developed the process of cracking petroleum molecules, which then made sulfurous deposits useable.

The second aspect of Menger's theory of goods that is highly relevant to the critique of the environmentalists' essential claims is his principle that the starting point both of goods-character and of the value of goods is *within us*—within human beings—and radiates outward from us to external things, establishing the goods-character and value, first, of things that directly satisfy our needs, such as food and clothing, which category of goods Menger describes as "goods of the first order," and, second, of the means of producing goods of the first order, such as the flour to bake bread and the cloth to make clothing, which category of goods Menger describes as "goods of the second order." Goods-character and the value of goods then proceed from goods of the second order to goods of the third order, such as wheat, which is used to make the flour, and cotton yarn, which is used to make the cloth to make the clothing. From there they proceed to goods of the fourth order, such as the equipment and land used to produce the wheat, and the raw cotton from which the cotton yarn is made. Thus, goods-character and the value of goods, in Menger's view, radiate outward from human beings and their needs to external things more and more remote from the direct satisfaction of human needs.

In Menger's own words: "The goods-character of goods of higher order is derived from that of the corresponding goods of lower order" (p. 63). And: "the value of goods of higher order is always and without exception determined by the prospective value of the goods of lower order in whose production they serve" (p. 150). And as to the value of goods of the first order: "The value an economizing individual attributes to a good is equal to the importance of the particular satisfaction that depends on his command of the good" (p. 146). "The determining factor . . . is . . . the magnitude of importance of those satisfactions with respect to which we are conscious of being dependent on command of the good" (p. 147).

In Menger's view, it is clear that the process of production represents a progression from goods of higher order to goods of lower order, that is, from goods more remote from the satisfaction of human needs and the source of the value of all goods, to goods less remote from the satisfaction of human needs and the source of the value of all goods. The process of production unmistakably appears as one of continuous enhancement of utility, as it moves closer and closer to its ultimate end and purpose: the satisfaction of human needs.

To apply Menger's views to the critique of the essential claims of environmentalism, it is first necessary to stress the fact that in his account of things, nature's contribution to natural resources is implicitly much less than

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is generally supposed. According to the prevailing view, what nature has provided are the natural resources that man exploits, that is, for example, all of the iron mines and coal mines, all of the oil fields and natural-gas wells, and so on. At the same time, according to the prevailing view, man's only connection to these allegedly all-nature-given natural resources is merely that he uses them up, with no means of replacing them. It is generally thought, for example, that while man produces such things as automobiles and refrigerators, his sole connection to the natural resources used in their production, such as iron ore, is merely to use them up, with no possibility of replacing them.

As I say, in Menger's view, nature's contribution to natural resources is much less than what is usually assumed. What nature has provided, according to Menger, is the material stuff and the physical properties of the deposits in these mines and wells, but it has not provided *the goods-character of any of them*. Indeed, there was a time when none of them were goods.

The goods-character of natural resources, according to Menger, is *created by man*, when he *discovers* the properties they possess that render them capable of satisfying human needs and when he *gains command over them* sufficient to direct them to the satisfaction of human needs.

All that needs to be added to Menger's view of the man-made creation of the goods-character of natural resources is a precise, explicit recognition of the *extent* of the *things* Menger refers to that nature has provided and which are not yet goods, but which, under the appropriate circumstances, might become goods, or, at least, from the domain of which things might be drawn to a greater extent to receive goods-character by virtue of man's contribution to the process. In other words, what precisely has nature provided with respect to which man might discover causal connections to the satisfaction of his needs and over greater portions of which he might gain command sufficient to direct such things to the satisfaction of his needs?

My answer to this question is that what nature has provided is *matter and energy*—matter in the form of all the chemical elements both known and as yet unknown, and energy, in all of its various forms. I call this contribution of nature "the natural resources provided by nature." Natural resources in the much narrower sense of "goods," as Menger uses the term, are drawn from this virtually infinite domain provided by nature. Natural resources that are goods in Menger's sense are natural resources provided by nature that man has made useable and accessible by virtue of discovering properties they possess that enable them to satisfy human needs and by virtue of gaining command over them sufficient to direct them to the satisfaction of human needs.

What is essential here is to grasp the distinction between the two senses of the expression "natural resources." First, there are natural resources as provided by nature. Such natural resources are matter, in all of its elemental forms, and energy, in all of its forms. And then, second, drawn from this domain, are natural resources to which man has given goods-character.

We are already familiar with the fact that an outstanding characteristic of natural resources in the first sense, that is, of natural resources as provided

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by nature, is that none of them is an intrinsic good—that their achievement of goods-character awaits action by man. A further, equally important, characteristic of natural resources as provided by nature, and which now needs to be stressed as strongly as possible, is *the enormity of their quantity.* Indeed, for all practical purposes, *they are infinite.* Strictly speaking, *they are one and the same with all the matter and energy in the universe.* That is the full extent of the natural resources supplied by nature.

Thus, in one sense—the sense of useable, accessible natural resources, that is, of goods as Menger defines the term—the contribution of nature is *zero.* Practically nothing comes to us from nature that is ready-made as a useable, accessible natural resource—as a good in Menger's sense. In another sense, however, the natural resources that come from nature—the matter, in the form of all the chemical elements, known and as yet unknown, and energy in all of its forms—are virtually *infinite* in their extent. In this sense, nature's contribution is boundless.

Even if we limit our horizon exclusively to the planet Earth, which certainly need not be our ultimate limit, the magnitude of natural resources supplied by nature is mind-bogglingly huge. It is nothing less than the *entire mass of the earth* and all of the energy that goes with it, from thunderstorms in the atmosphere, a single one of which discharges more energy than all of mankind produces in an entire year, to the tremendous heat found at the earth's core in millions of cubic miles of molten iron and nickel. Yes, the natural resources provided by nature in the earth alone extend from the upper limits of the earth's atmosphere, four thousand miles straight down, to its center. This enormity consists of *solidly packed chemical elements.* There is not one cubic centimeter of the earth, either on its surface or anywhere below its surface, that is not some chemical element or other, or some combination of chemical elements. This is nature's contribution to the natural resources contained in this planet. It indicates *the incredibly enormous extent of what is out there awaiting transformation by man into natural resources possessing goods-character.*

And this brings me to what I consider to be the revolutionary view of natural resources that is implied in Menger's theory of goods. Namely, not only does man create the goods-character of natural resources—by obtaining knowledge of their useful properties and then creating their useability and accessibility by virtue of establishing the necessary command over them—but *he also has the ability to go on indefinitely increasing the supply of natural resources possessing goods-character.* He *enlarges* the supply of useable, accessible natural resources—that is, natural resources possessing goods-character—*as he expands his knowledge of and physical power over nature.*

The prevailing view, which dominates the thinking of the environmentalists and the conservationists, that there is a scarce, precious stock of natural resources that man's productive activity serves merely to deplete is wrong. Seen in its full context, *man's productive activity serves to enlarge the supply of useable, accessible natural resources by converting a larger, though still*

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tiny, fraction of nature into natural resources possessing goods-character. The essential question concerning natural resources is *what fraction* of the virtual infinity that is nature does man possess sufficient knowledge concerning and sufficient physical command over to be able to direct it to the satisfaction of his needs. This fraction will always be very small indeed and will always be capable of vastly greater further enlargement.

The supply of useable, accessible natural resources expands as man expands his knowledge of and physical power over the world and universe. Up to now, although considerably expanded in comparison with what it was in previous centuries, man's physical power over the world has been essentially confined to the roughly 30 percent of the earth's surface that is not covered by sea water, and there it has been further confined to depths that are still measured in feet, not miles. Man is literally still just scratching the surface of the earth, and the far lesser part of its surface at that. And nowhere is he dealing with nature nearly as effectively or efficiently as he someday might.

In addition to the examples previously given with respect to iron, petroleum, aluminum, radium, and uranium, consider the implications for the supply of useable, accessible natural resources of man becoming able to mine at greater depths with less effort; to move greater masses of earth with less effort; to break down compounds previously beyond his power, or to do so with less effort; to gain access to regions of the earth previously inaccessible; or to improve his access to regions already accessible. All of these increase the supply of useable, accessible natural resources. They do so, of course, by virtue of creating what Menger describes as command over things sufficient to direct them to the satisfaction of human needs. All of them bestow the character of goods on what had before been mere things.[1]

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[1]As I wrote in my book *Capitalism: A Treatise on Economics* (1996):

> Today, as the result of such advances, the supply of economically useable natural resources is enormously greater than it was at the beginning of the Industrial Revolution, or even just one or two generations ago. Today, man can more easily mine at a depth of a thousand feet than he could in the past at a depth of ten feet, thanks to such advances as mechanical-powered drilling equipment, high explosives, steel structural supports for mine shafts, and modern pumps and engines. Today, a single worker operating a bulldozer or steam shovel can move far more earth than hundreds of workers in the past using hand shovels. Advances in reduction methods have made it possible to obtain pure ores from compounds previously either altogether impossible to work with or at least too costly to work with. Improvements in shipping, railroad building, and highway construction have made possible low-cost access to high-grade mineral deposits in regions previously inaccessible or too costly to exploit.

And, I added:

> There is no limit to the further advances that are possible. Reductions in the cost of extracting petroleum from shale and tar sands have the

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The key point here is that, following Menger's insights into the nature of goods, the supply of economically useable, accessible natural resources is *expandable*. It is enlarged as part of the same process by which man increases the production and supply of all other goods, namely, scientific and technological progress and saving and capital accumulation.

The fundamental situation is this. Nature presents the earth as an immense solidly packed ball of chemical elements. It has also provided comparably incredible amounts of energy in connection with this mass of chemical elements. If, over and against this massive contribution from nature stands motivated human intelligence–the kind of motivated human intelligence that a free, capitalist society so greatly encourages, with its prospect of earning a substantial personal fortune as the result of almost every significant advance–there can be little doubt as to the outcome: Man will succeed *in progressively enlarging the fraction of nature's contribution that constitutes goods*; that is, he will succeed in progressively enlarging the supply of useable, accessible natural resources.

The likelihood of his success is greatly reinforced by two closely related facts: the progressive nature of human knowledge, and the progressive nature of capital accumulation in a capitalist society, which, of course, is also a *rational* as well as a free society. In such a society, the stock of scientific and technological knowledge grows from generation to generation, as each new generation begins with all of the accumulated knowledge acquired by previous generations and then makes its own, fresh contribution to knowledge. This fresh contribution enlarges the stock of knowledge transmitted to the next generation, which in turn then makes its own fresh contribution to knowledge, and so on, with no fixed limit to the accumulation of knowledge short of the attainment of omniscience.

Similarly, in such a society, the stock of capital goods grows from generation to generation. The larger stock of capital goods accumulated in any generation on the foundation of a sufficiently low degree of time preference and thus correspondingly high degree of saving and provision for the future, together with a continuing high productivity of capital goods based on the foundation of advancing scientific and technological knowledge, serves to

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> potential for expanding the supply of economically useable petroleum by a vast multiple of what it is today. Hydrogen, the most abundant element in the universe, may turn out to be an economical source of fuel in the future. Atomic and hydrogen explosives, lasers, satellite detection systems, and, indeed, even space travel itself, open up limitless new possibilities for increasing the supply of economically useable mineral supplies. Advances in mining technology that would make it possible to mine economically at a depth of, say, ten thousand feet, instead of the present much more limited depths, or to mine beneath the oceans, would so increase the portion of the earth's mass accessible to man that all previous supplies of accessible minerals would appear insignificant in comparison. (p. 64)

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produce not only a larger and better supply of consumers' goods but also a comparably enlarged and better supply of capital goods. That larger and better supply of capital goods, continuing on the same foundation of low time preference and advancing scientific and technological knowledge, then serves to further enlarge and improve the supply not only of consumers' goods but also of capital goods. The result is continuing capital accumulation, on the basis of which, from generation to generation, man is able to confront nature in possession of growing powers of physical command over it.

On the basis of both progressively growing knowledge of nature and progressively growing physical power over nature, man progressively enlarges the fraction of nature that constitutes goods; that is, the supply of useable, accessible natural resources.

II

I turn now to the second aspect of Menger's theory of goods that relates to the critique of the essential tenets of environmentalism, namely, his view of the process of production as one of continuous enhancement of utility as it moves from goods of higher order to goods of lower order.

All that it is necessary to add to Menger's view is recognition once again of the fact that the earth is an immense ball of solidly packed chemical elements. Now these chemical elements constitute man's external material surroundings, that is, his *environment.* They are the external material conditions of human life.

When these facts are kept in mind, it becomes clear that the process of production, and the whole of economic activity, so far from constituting a danger to man's environment as the environmentalists claim, has the inherent tendency to *improve* his environment, indeed, that that is its essential purpose.

This becomes obvious as soon as one realizes that not only does the entire world physically consist of nothing but chemical elements, but also that these elements are never destroyed. They simply reappear in different combinations, in different proportions, in different places.[2]

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[2]As I wrote in *Capitalism*:

> Apart from what has been lost in a few rockets, the quantity of every chemical element in the world today is the same as it was before the Industrial Revolution. The only difference is that, because of the Industrial Revolution, instead of lying dormant, out of man's control, the chemical elements have been moved about, as never before, in such a way as to improve human life and well-being. For instance, some part of the world's iron and copper has been moved from the interior of the earth, where it was useless, to now constitute buildings, bridges, automobiles, and a million and one other things of benefit to human life. Some part of the world's carbon, oxygen, and hydrogen has been separated from certain compounds and recombined in others, in the

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If anyone should ask how the environmentalists could miss the fact that precisely production and economic activity constitute the means whereby man improves his environment, the answer is that the environmentalists do not share Menger's (or Western Civilization's) starting point of value—namely, the value of human life and well-being. In their view, the starting point of value is the alleged "intrinsic value" of nature—that is, the alleged value of nature in and of itself, totally apart from any connection to human life and well-being. Such alleged intrinsic value is destroyed every time man changes anything whatever in the preexisting state of nature.

When the environmentalists speak of "harm to the environment" in connection with such things as clearing jungles, blasting rock formations, or the loss of this or that plant or animal species of no known or foreseeable value to man, what they actually mean in the last analysis is the loss of the alleged intrinsic values constituted by such things, and not any actual loss whatever to man. On the contrary, they are eager to sacrifice human life and well-being for the preservation of such alleged intrinsic values. To them, the "environment" is not the surroundings of man, deriving its value from its relationship to man, but nature in and of itself, deriving its value from itself—that is, allegedly possessing "intrinsic" value.

Of course, the environmentalists also frequently pose as supporters of human life and well-being, and at such times they direct their fire at various

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> process releasing energy to heat and light homes, power industrial machinery, automobiles, airplanes, ships, and railroad trains, and in countless other ways serve human life. It follows that insofar as man's environment consists of the chemical elements iron, copper, carbon, oxygen, and hydrogen, and his productive activity makes them useful to himself in these ways, his environment is correspondingly improved.
>
> Consider further examples. To live, man needs to be able to move his person and his goods from place to place. If an untamed forest stands in his way, such movement is difficult or impossible. It represents an improvement in his environment, therefore, when man moves the chemical elements that constitute some of the trees of the forest somewhere else and lays down the chemical elements brought from somewhere else to constitute a road. It is an improvement in his environment when man builds bridges, digs canals, opens mines, clears land, constructs factories and houses, or does anything else that represents an improvement in the external, material conditions of his life. All of these things represent an improvement in man's material surroundings—his environment. All of them represent the rearrangement of nature's elements in a way that makes them stand in a more useful relationship to human life and well-being.
>
> Thus, all of economic activity has as its sole purpose the improvement of the environment—it aims exclusively at the improvement of the external, material conditions of human life. Production and economic activity are precisely the means by which man adapts his environment to himself and thereby improves it. (p. 90)

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comparatively minor negative byproducts of production and economic activity, such as local degradation of the quality of air or water, while totally neglecting the enormous positives, which, of course, are of overwhelmingly greater significance.

What guarantees that the positive benefits of production and economic activity incalculably outweigh any negatives associated with their byproducts is the principle of respect for individual rights. Although by no means always observed, this principle requires that one's production and economic activity not only benefit oneself but also that, insofar as any other people are involved in the process, the use of their labor and property must be obtained only by their voluntary consent. And, of course, to secure their voluntary consent, their cooperation must be made worth their while.

Thus, for example, if I wish to construct a building, not only will I benefit from it, but also all those who work for me in its construction and all those who supply me with materials and equipment for constructing it. So too will the building's purchaser or tenants—if I construct it for the purpose of sale or rent. In addition, no third party's property or person may be harmed by my action. For example, I risk serious legal penalty if I construct my building in a way that undermines a neighboring building's foundation or that makes my building unsafe for passersby.

The major complaints the environmentalists currently make concern the fact that I heat and air-condition my building—to be sure, not I as one isolated individual, but as one of many tens or hundreds of millions of individuals using fossil fuels or chlorofluorocarbons (CFCs). In so doing, mankind is allegedly guilty of the crime of increasing the level of carbon dioxide and other greenhouse gases, thereby causing "global warming," or of increasing the level of ozone-destroying molecules in the upper atmosphere, thereby causing higher rates of skin cancer. And because mankind is allegedly guilty in these ways, the environmentalists assume that I as one individual man must be restricted, if not prohibited altogether, in my use of fossil fuels and CFCs, even though I, as one individual, am utterly incapable of causing any of the effects alleged; and the same, of course, is true, *mutatis mutandis*, for each and every other individual.

III

Here I want to turn to the enormous spirit of individualism that is found in Ludwig von Mises.[3] Only individuals think and only individuals act, says Mises (1951, p. 113). It follows, of course, that it is only for his own actions that an individual should be held responsible. The son should not be punished for the sins of the father; one member of a race or nation or economic

[3]See, for example, two of works by Mises (1966, pp. 41-46, 145-53, 165-69; and 1951, pp. 63-68, 113, 297-99, 401-03).

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class should not be held responsible for the deeds of any other members of that race, nation, or economic class.

And so too should it be in the case of any alleged environmental damage. If an individual, or an individual business enterprise, is incapable by himself of causing global warming or ozone depletion, or whatever, on a scale sufficient to cause harm to any other specific individual or individuals, then there is absolutely no proper basis on the individualistic philosophy of Mises for prohibiting his action.[4]

The individual should not be punished for consequences that can occur only as the result of the actions of the broader category or group of which he is a member, but that do not occur as the result of his own actions. Thus, even if it is true that the combined effect of the actions of several billion people really is to cause global warming or ozone depletion (neither of these claims has actually been proven—the claims of global warming have all the certainty of *a weather forecast*, extended out to the next 100 years!), but even *if*, as I say, the claims were true, it still would not follow that any proper basis existed for prohibiting any specific individual or individuals from acting in ways that, only when aggregated across billions of individuals, resulted in global warming or ozone depletion or whatever.

If global warming or ozone depletion or whatever really are consequences of the actions of the human race considered collectively, but not of the actions of any given individual, including any given individual private business firm, then the proper way to regard them is as the equivalent of *acts of nature*. Not being caused by the actions of *individual* human beings, they are equivalent to actions not *morally* caused by human beings *at all*, that is to say, to *acts of nature*.

Once we see matters in this light, it becomes clear what the appropriate response is to such environmental change, whether global warming and ozone depletion, or global cooling and ozone enrichment, or anything else nature may bring. It is the same as the appropriate response of man to nature in general. Namely, individual human beings must be free to deal with nature to their own maximum individual advantage, subject only to the limitation of not initiating the use of physical force against the person or property of other individual human beings. By following this principle, man will deal with any of the negative forces of nature resulting as byproducts of his own activity taken in the aggregate in precisely the same successful way that he regularly deals with the primary forces of nature.

We enjoy an incredibly marvelous industrial civilization, the nature of which is indicated by the fact that, because of it, vast numbers of human

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[4]As I say in *Capitalism*,

> To prohibit the action of an individual in such a case is to hold him responsible for something for which he is simply not in fact responsible. It is exactly the same in principle as punishing him for something he did not do. (p. 91)

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beings can travel at breathtaking speeds for hundreds of miles at a stretch in their own personal automobiles, listening to symphony orchestras as they go—indeed, can fly over whole continents in a matter of hours in jet planes, while watching movies and drinking martinis; can walk into darkened rooms and flood them with light by the flick of a switch; can open a refrigerator door and enjoy delicious, healthful food brought from all over the world; can do all this and so much more. This is what we have. This, and much, much more, is what people everywhere could have if they were intelligent enough to establish economic freedom and capitalism.

But all this counts for virtually nothing as far as the environmentalists are concerned. They are ready to throw it all away because, they allege, it causes global warming and ozone depletion, that is, *bad weather*. And the best way, they say, for us to avoid such bad weather, and thus to control nature more to our advantage, is to abandon modern, industrial civilization and capitalism.

The appropriate answer to the environmentalists is that we will not sacrifice a hair of industrial civilization, and that if global warming and ozone depletion really are among its consequences, we will accept them and deal with them—by such reasonable means as employing more and better air conditioners and sun block, not by giving up our air conditioners, refrigerators, and automobiles.

More fundamentally, the answer to the environmentalists is that the appropriate response to environmental change, whether global warming or a new ice age, is *the economic freedom of a capitalist society*. Sooner or later, such environmental change will occur—if not in this new century or even in this new millennium, then certainly at some time in the more remote future. At that time, it will require vast changes in human economic activity. Some areas presently used for certain purposes will become unuseable for those purposes. Conceivably, they might even become uninhabitable. Other areas presently uninhabitable or barely habitable, will become much more desirable. Major changes in the comparative advantages of vast areas will take place, to which people must be free to respond.[5]

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[5]As I wrote in *Capitalism*:

> Even if global warming turned out to be a fact, the free citizens of an industrial civilization would have no great difficulty in coping with it—that is, of course, if their ability to use energy and to produce is not crippled by the environmental movement and by government controls otherwise inspired. The seeming difficulties of coping with global warming, or any other large-scale change, arise only when the problem is viewed from the perspective of government central planners.
>
> It would be too great a problem for government bureaucrats to handle. . . . But it would certainly not be too great a problem for tens and hundreds of millions of free, thinking individuals living under capitalism to solve. It would be solved by means of each individual being free to decide how best to cope with the particular aspects of global warming that affected him.

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A rational response to the possibility of large-scale environmental change is to establish *the economic freedom of individuals to deal with it*, if and when it comes. Capitalism and the free market are the essential means of doing this, not paralyzing government controls and "environmentalism." And both in the establishment of economic freedom and in every other major aspect of the response to environmentalism, the philosophy of Ludwig von Mises and Carl Menger must lead the way.

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> Individuals would decide, on the basis of profit-and-loss calculations, what changes they needed to make in their businesses and in their personal lives, in order best to adjust to the situation. They would decide where it was now relatively more desirable to own land, locate farms and businesses, and live and work, and where it was relatively less desirable, and what new comparative advantages each location had for the production of which goods. Factories, stores, and houses all need replacement sooner or later. In the face of a change in the relative desirability of different locations, the pattern of replacement would be different. Perhaps some replacements would have to be made sooner than otherwise. To be sure, some land values would fall and others would rise. Whatever happened individuals would respond in a way that minimized their losses and maximized their possible gains. The essential thing they would require is the freedom to serve their self-interests by buying land and moving their businesses to the areas rendered relatively more attractive, and the freedom to seek employment and buy or rent housing in those areas.
>
> Given this freedom, the totality of the problem would be overcome. This is because, under capitalism, the actions of the individuals, and the thinking and planning behind those actions, are coordinated and harmonized by the price system (as many former central planners of Eastern Europe and the former Soviet Union have come to learn). As a result, the problem would be solved in exactly the same way that tens and hundreds of millions of free individuals have solved much greater problems, such as redesigning the economic system to deal with the replacement of the horse by the automobile, the settlement of the American West, and the release of the far greater part of the labor of the economic system from agriculture to industry. (pp. 88-89)

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A Hayekian Analysis of the Term Structure of Production

Robert F. Mulligan

The Hayekian triangle (Hayek 1931, p. 39; subsequently developed by Hayek 1941; 1966; 1969) is used to analyze the structure of production in the United States. Using 1959–2000 monthly data, the relationship between government security interest rates and resource employment in several production sectors is examined. When interest rates increase, the structure of production becomes less roundabout, redistributing productive resources away from producer goods toward consumer goods. When interest rates rise, higher rates of return in production are necessary to compete with financial instruments such as relatively higher-yielding government bonds. This is manifested in a shifting of resources from early to late stages of production and can be shown as a shortening of the base of the Hayekian triangle.

In the most stylized case, the interest rate is proportional to the slope of the hypotenuse of the Hayekian triangle. The steeper hypotenuse reflects the higher interest rate and consumers' increased time preference–in this higher-interest environment, consumers are less willing to wait for immediate consumption goods. Conversely, when interest rates fall, the structure of production becomes more roundabout, redistributing marginal resources

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toward productive activities with lower rates of return. These more roundabout production processes produce more final output but require more production time.

Although the Hayekian triangle is a general model of intertemporal resource allocation, it is generally interpreted as a model of how interest rates determine allocation of investment versus consumption spending, and how the structure of production is manifested in the capital stock. In this paper, Hayek's model of intertemporal production is tested using labor, rather than capital, as the productive resource. This approach is justified in two ways: (1) Hayek's is a general model of intertemporal resource allocation, tested here with labor data; or (2) labor data can also be considered a proxy for capital, which is more difficult to measure.

Lachmann (1978, pp. 2-4) noted that capital goods, unlike land and labor, lack a natural unit of measurement. Although the periodic rental payment equivalent–the amount capital goods yield for hire per hour or per month–technically can be observed, the size of the capital stock can only be estimated, as can the amount employed in different productive sectors. Consequently, this study uses more readily observable labor data. Labor market sectors examined include: manufacturing; construction; finance, insurance, and real estate; government; mining; services; transportation and public utilities; retail trade industry; and wholesale trade industry. Since the production process has both time and value dimensions in Austrian capital theory (Garrison 1978, p. 169; 2001, p. 46), industrial sectors representing predominantly early, middle, or late stages of production employ complementary land and labor resources as they expand or contract in response to interest rate changes over the business cycle.

The Hayekian triangle provides prior expectations about how employment levels in late and early stages of production should vary as interest rates change. Employment in late stages of production, such as retail trade industry, should be directly proportional to nominal interest rates. Employment in sectors predominantly representing early stages of production, such as mining, should be inversely proportional to the interest rate. Econometric estimation is used to test Hayek's model against these prior expectations. Some sectors are especially difficult to characterize a priori as early, middle, or late stages of production. This analysis provides an empirical rationale for classifying each sector by stage of production, independent of prior expectations.

Findings regarding labor market sectors are related to business cycle fluctuations and sectoral capital investment. According to Austrian capital theory, real interest rates are countercyclical (Garrison 2001, pp. 68-70). Employment in late-stage-of-production sectors is also countercyclical, while employment in early-stage-of-production sectors is procyclical. It should be noted that Austrian business cycle theory hinges far more fundamentally on policy-induced changes in the interest rate, which drive the cycle, than on distinctions between real and nominal interest rates or between anticipated and unanticipated changes in the price level. Furthermore, in the Austrian view,

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though preference-induced changes in interest rates affect resource allocation, they do not cause a business cycle.

This paper also attempts to approximate the time-to-maturity for each production sector, by analyzing which of several long-, medium-, and short-term interest rates employment in each sector responds to most closely. Because the structure of production, represented by the base of the Hayekian triangle, shortens and lengthens over time as interest rates change, it is often particularly difficult to associate a particular maturity with early and middle stages of production.

The rest of the paper is organized as follows. The theoretical basis for the paper is briefly developed in "The Hayekian Theory of Production Structure." Data sources are documented in "Data." "Cointegration Analysis" presents the empirical work, based on a decomposition of the labor market into nine industrial sectors, and presents tests for cointegration, followed by estimates of cointegration spaces normalized with respect to interest rates. Concluding comments are presented in "Conclusion."

The Hayekian Theory of Production Structure[1]

At each stage of production, the value of the objects of productive activity, also called goods-in-process, working capital, or producer goods, is related to both the value of the consumable output into which it may be transformed and the time required to complete the transformation (Hayek 1967, pp. 37-47; Garrison 1985, p. 166; 2001, pp. 46-49). This value is the expected future value of the consumable output, discounted to the present over the expected remaining production time. Ideally constructed, the discount rate is the rate of time preference or natural rate of interest, not any observed nominal interest rate. Entrepreneurial planners actually perform time discounting with prevailing market nominal interest rates representing their opportunity cost, rather than subjective rates of time preference. These objectively observable interest rates are more likely to reflect actual, subjective time preferences if they are not being manipulated by the central bank. Entrepreneurs are free to adjust production plans, and do so in response to technological advances; disappointed expectations about resource availability and cost, or about output demand and price; and changes in interest rates.

The concept of stages of production is subjective (Garrison 1985, p. 167; 2001, p. 46), thus specific industries often operate simultaneously in several different stages, and any empirical classification of industrial sectors can only be of which stage predominates. For example, coal used for home heating represents a later stage of production than coal burned in a blast furnace. Furthermore, many resources, including producer goods, are nonspecific to a particular stage of production. Because each industry can use many resources

[1]This section briefly summarizes the Austrian capital theory on which the empirical work presented in the section "Cointegration Analysis" is based.

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in multiple processes, industries often operate simultaneously in different stages of production.

Capital goods may substitute or complement other capital goods. Furthermore, this is a general property of all resources; for any capital good, labor may be either a substitute or a complement; different kinds of labor may be substitutes or complements for a given capital good, or for other given kinds of labor. Different productive resources also have various degrees of substitutability and complementarity (Garrison 1985, p. 168; 2001, p. 49). Inputs are combined at each stage of production. Stages of production are not instantaneous; thus time preference assures that outputs from each stage have greater expected value than the sum of inputs (Mises 1966, pp. 483-88; Rothbard 1970, pp. 323-32; Garrison 1985, p. 169; 2001, p. 46). Inputs do not produce surplus value and are not productive in the classical sense, but the task of coordination performed by entrepreneurial planners is essential for production to take place. In the Austrian view, the increase of value in production over time is due exclusively to:

1. the time span required for each stage of the production process,
2. the fact of time preference, which discounts the inputs into each stage, compared to the expected output from each stage, and
3. the value consumers confer on the final output, which they use to satisfy their wants.

The interest rate is the rate of time discount implicit in the pattern of prices of productive resources, including capital goods. Garrison cautions (1985, pp. 169-70; 2001, p. 50) this is not necessarily the same as the loan rate determined in the loanable funds market, though he also acknowledges the market process eventually adjusts the loan rate to the broader market rate of interest. In the Austrian view, determinants of the broader market interest rate are not exhausted by the determinants of the loan rate in the loanable funds market (Rothbard 1970, pp. 321-23), although the slope of the hypotenuse of the Hayekian triangle reflects the interest rate determined in the loanable funds market (Garrison 2001, p. 50).

The value of inputs is determined by the price an entrepreneur expects to command for output at the end of the stage of production, whether for sale to a consumer or to a producer who uses output from an earlier stage as input in a later stage. This expected price of the entrepreneur's output is discounted over the duration of the entrepreneur's stage of production (Garrison 1985, p. 170; 2001, p. 46). The discount rate connecting the prices of intermediate outputs produced in early, middle, and late stages should reflect the rate of time preference in the absence of central bank intervention.

Garrison (1985, pp. 171-76; 2001, pp. 57-67) attributes changes in secular growth rates and the distribution of output between consumption and investment goods to changes in liquidity preference, changes in labor supply due to changes in labor-leisure preferences, and changes in technology. The Austrian

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theory of the business cycle attempts to subsume the effects of both kinds of changes in preferences in an encompassing theory based on artificial changes in interest rates mimicking changes in time preference (Garrison 1985, p. 177; 2001, pp. 67-71). Monetary expansion, which lowers the interest rate, brings about a shift in apparent time preference away from current consumption toward future consumption. Monetary contraction has the opposite effect. The earlier the stage of production, the greater the period of time separating existing capital or producer goods from the prospective consumer goods, and the greater the difference in value due to time discounting between producer and consumer goods. Thus the value of early-stage producer goods is more sensitive to interest rate changes (Garrison 1985, pp. 178-77; 2001, p. 72).

When time preference decreases, this is signaled immediately by a reduction in nominal and real interest rates because there is an immediate and corresponding decrease in the natural rate of interest, on which all real and nominal interest rates are based. Productive resources are reallocated from late stages to early stages of production. New, earlier stages are created, extending production structure. But because this reallocation is effected by a change in preference for current as opposed to future consumption, the height of the triangle must eventually increase to reflect higher future consumption levels.

Hayek (1967, pp. 136-39) and Garrison (1986, p. 440; 1988; 2001, pp. 71-73) draw a fundamental distinction between ordinary changes in time preference and policy-induced changes in interest rates. Normal changes in time preference do not cause the business cycle. Austrian capital theorists construct a malinvestment-misallocation argument to explain how policy-induced changes in interest rates cause the business cycle. As interest rates fall in response to central bank injections of new money, the artificially low interest rate drives a wedge between saving and investment. Increased saving entails an initial contraction of consumer-good industries. In contrast, however, credit expansion lowers interest rates, simultaneously reducing the attractiveness of saving and causing potential savers to spend more of their income on consumer goods. Mises (1966, pp. 550-66) develops a similar argument. In Mises's view, when the central bank expands the supply of money or credit, it signals a decrease in the real interest rate, but not necessarily the nominal interest rate. Hayek characterizes artificial booms engineered through monetary expansion as working through malinvestment and forced saving; Mises characterizes these booms as working through malinvestment and overconsumption. In fact, both overconsumption and forced saving accompany the malinvestment of the policy-induced boom in turn. The Misesian overconsumption boom occurs first, as consumers who save less in response to the unattractively low interest rate consume more. The Misesian overconsumption boom may be prolonged if entrepreneurs are sufficiently alert to opportunities afforded by the credit expansion. Once the economy exhausts its ability to reallocate resources from middle to late stages of production to provide additional consumption goods desired by consumers, the Hayekian forced saving boom begins.

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It is important to stress that Austrian capital theory does not rely on the Fisherian distinction between real and nominal interest rates or the distinction between anticipated and unanticipated changes in the general price level. Instead it emphasizes a distinction between preference-based changes in interest rates and policy-induced changes. It does not matter whether these two kinds of changes in interest rates are affected by, or accompanied by, changes in the general price level.

When interest rates fall, households save less in response to the less attractive yield, and demand more final output for immediate consumption. At the same time, firms borrow more at low interest to finance new productive resources, and they reallocate resources, including complementary labor, toward early stages of production. Thus the Hayekian triangle simultaneously becomes steeper, or less roundabout, for late stages, and flatter, or more roundabout, for early stages. The policy of monetary injection drives a wedge between saving and investment in the loanable funds market. Households save less and consume more in response to the lower interest rate, demanding more late-stage consumer goods. Entrepreneurs respond to the additional demand for consumer goods by reallocating resources toward late stages of production. But the monetary injection drives down the interest rate and makes more funds available for investment, even in the absence of additional saving. Entrepreneurs allocate these funds to early stages of production. The production structure simultaneously extends average production time and attempts to increase the amount of output supplied to consumers. Hayek (1967, p. 137) describes this concave "triangle" as curvilinear.

The Misesian overconsumption boom occurs first, when firms initially respond to the increased demand for consumers' goods with a secondary reallocation away from middle-stage production toward late-stage. The Hayekian forced saving boom occurs soon after, when consumers are saving less in response to the lower interest rate and begin demanding more output for immediate consumption, while firms are still responding to the lower interest rate by reallocating away from late-stage production (consumer goods) toward early-stage production (producer goods). This gives the curvilinear Hayekian triangle its "pinched in the middle" shape characteristic of an unsustainable monetary or credit expansion boom. The production structure cannot continue to deliver the high level of late-stage consumer goods, given the amount of resources distributed over early and middle stages, and generally the lower-yielding resources employed in early and middle stages of production are producing intermediate inputs that will be abandoned as soon as the interest rate rises back to a sustainable level.

During the boom caused by a policy-induced credit expansion, the curvilinear triangle does not reflect individuals' true time preferences. The interest rates prevailing in, and discounting inputs from outputs of, each stage—lower in early stages and higher in late stages—no longer reflect the natural rate of interest. This applies to both real and nominal interest rates, and the credit-induced curvilinear production structure is never sustainable. Because the

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structure of production ultimately responds to unsustainably low interest rates by simultaneously attempting to deliver more consumer goods in the late stages and more producer goods in the earlier stages, different maturity interest rates have to be considered, corresponding approximately to the variable duration of the production structure.

This paper assumes that virtually all intertemporal resource allocation accompanying changes in interest rates is due to expansionary monetary policy. If resource reallocation occurred because of changes in intertemporal consumption preferences or technological change, that reallocation should not be systematically related to interest rates, especially nominal interest rates. In the sample period of over 40 years, dramatic technological advances and changes in consumer time preference certainly occurred, due, for example, to demographic changes in age distribution. Unlike policy-induced credit expansion, these factors do not play any systematic role in driving the business cycle. Technological change is generally interest-neutral (Garrison 2001, pp. 59-62), while credit expansion never is. Also, like technological change, changes in time preference never cause unsustainable reallocation of productive resources.

DATA

This section documents the data used for econometric estimation and motivates the choice of data. The U.S. Department of Labor provides seasonally adjusted monthly sectoral employment data for 1959-2000. The percent employed in each sector is sectoral employment divided by the labor force.[2]

Interest rates for several maturities, ranging from three months to five years, were used to capture the apparent implicit time preference latent in the nominal term structure. Interest rates influence productive activity in several ways, over several different periods, listed from shortest to longest duration:

1. duration of the productive process,
2. installation period for productive capital, or
3. expected useful life of installed capital.

Shortest maturities were chosen in the first instance because they are more relevant for determining short-run resource allocation, and in the second instance for parsimony. Furthermore, the first and shortest set of interest maturities is more relevant for determining labor allocation. This is a general feature of the labor market, whether specific labor services are complementary with, or substituted for, given capital equipment. This circumstance arises from the fact that entrepreneurs adjust production plans through varying the

[2]The Federal Reserve Bank of St. Louis provides interest rates. Three-month, six-month, and one-year Treasury bill secondary market rates and three-year and five-year constant maturity rates are taken for the same period. All data are from the Federal Reserve Bank of St. Louis Federal Reserve Economic Data (FRED) Web site.

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composition and quantity of labor once they are no longer free to adjust the quantity and use of installed capital. Labor employment adjusts in response to short-term interest rates. Entrepreneurs would not adjust capital use except in response to changes in interest rates of maturities at least as long as the minimum capital installation period or lease-term. Because sectoral employment rates are used both as proxies for capital structure and to capture the general level of productive activity in different sectors, labor wage rates are not included in this analysis. This paper examines the extent to which general productive activity, measured by sectoral labor employment, responds to interest rates of various maturities.

Cointegration Analysis

This section presents and interprets empirical estimates based on the Hayekian triangle using interest and employment data. In interpreting empirical results, it must be kept in mind that productive resources do not flow to the most productive activities of their own accord. Workers offer their services on the labor market in response to higher relative wages and lowered opportunity costs. Entrepreneurs construct and adjust the structure of resource allocation and production in response to expected consumer demand for consumable output and expected opportunity cost.

In the subjectivist theory of a capital-using economy, entrepreneurial planners act as the subjects of productive activities, creating consumable output as the object (Garrison 1985, pp. 164-65; 2001, p. 15). Consumers confer value on consumable output because they desire it to satisfy their wants. The value of producer goods is derived from the consumable output they are expected to yield and expected consumer demand for the output. The earlier that entrepreneurs intervene in productive activity, the greater the opportunity to increase the final yield of consumable output. Thus the final output should be greater in value the more roundabout the production process. This intuition is supported by the general observation that the more roundabout the production process, the greater the scope for employment of capital.

Interest rates facilitate intertemporal coordination of productive resources by clearing the loanable funds market (Garrison 1986, p. 440; 2001, p. 39). In this regard, disequilibrium interest rates play the same role as prices in signaling opportunities for entrepreneurial discovery (Kirzner 1992b, p. 146; 1992c, pp. 160-61; 1997), and individual entrepreneurs respond by maintaining the production structure, that is, they adjust it by reallocating resources.

Installed vs. Financial Capital in Entrepreneurial Plans: Bischoff's Putty-clay Model

Bischoff (1970) presents a valuable distinction between uninvested financial capital and installed physical capital: the "putty-clay" model. In his formulation, "putty" capital is uninvested saving that helps clear the loanable funds market. "Clay" capital has already been installed, and is expected to

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yield a definite return in currently operating entrepreneurial plans. This expected return must be at least as high as the return on financial assets, such as government bonds, available to entrepreneurs when they formed their production plans. The actual return on installed capital may be lower, as expectations may be disappointed.

When interest rates change, this impacts entrepreneurial decisions about whether and where to invest "putty" capital. "Clay" capital, which is already installed, may be abandoned completely, or may be used exactly as called for in the original production plan. Most commonly, however, "clay" capital is used in modified production plans, which attempt to extract as high a return as possible (Garrison 2001, p. 74). The available "clay" capital was intended for a different production plan, predicated on a different interest rate, for a given maturity corresponding to the useful life of the installed capital.

In Keynesian terms, there is a liquidity constraint on "clay" capital, in contrast to uninvested "putty" capital. If investors could take their funds directly out of installed capital and invest these funds in higher-yielding government bonds or other financial assets, they would, but these funds are tied up in illiquid physical assets, or in term leases on physical assets. These physical assets may be sold, but they cannot command as high a price once their productive yield becomes less competitive. The objective of empirical examination of the term structure of labor markets is to search for evidence of such adjustment of the production structure.

Unit Root and Cointegration Tests

Most economic time series display an increasing trend, and unit root tests were developed to identify this characteristic. Stationary time series are said to have zero roots, or to be integrated of order zero [I(0)]. Nonstationary series may have a unit root or be first-order integrated [I(1)]. Unit root series become I(0) when first-differenced. Regressions estimated with nonstationary data will not have the white-noise residuals needed for valid inference. The regression could be estimated in first-differences, but then any long-term information carried by the levels of the variables is lost. Error-correction models overcome this difficulty by estimating a regression in first-differences augmented by error-correction terms, the lagged differences between the actual and estimated value of the left-hand-side variable, collectively referred to as the error-correction process, or the disequilibrium adjustment process. The coefficients on the first-differenced variables constitute the cointegrating vector or structural relationship. A sufficient number of lagged error-correction terms is added to guarantee white-noise errors and valid inference (Davidson and McKinnon 1993, pp. 720-30; Kennedy 1998, pp. 266-70).

Estimation with error-correction models is of special interest to the Austrian School because under ideal conditions, the technique provides estimates of both a structural or equilibrium process–which adjustment is always effected toward, though it may never be perfectly realized–and the error-correction or disequilibrium adjustment process, through which adjustment is

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made toward the hypothesized equilibrium. Even if one rejects the reality of any hypothesized equilibrium, estimates of the disequilibrium adjustment process would still carry interest.

Because of the length of the data set, the Johansen-Juselius (1990) procedure was used to identify stable, long-term relationships among the sectoral employment and interest rates. Table 1 reports Phillips-Perron (1988) unit-root tests for each variable. All are found to have unit roots. When the test regression is estimated with an intercept but no trend, the null hypothesis of a unit root [I(1)] is never rejected at conventional significance levels for employment levels calculated as percentages of the labor force, or for the interest rates. When a linear trend is added to the test regression, the same result is observed, except for mining, where the I(1) null is rejected at the 5-percent level, but not at the 1-percent level. The finding that mining may be I(0) indicates it might be deleted from the vector error-correction model, but mining was retained in the model because it remains a part of the nation's employment statistics, though declining in importance throughout the sample period, and because there is some support for the conclusion that mining is I(1). The null hypothesis of a unit root is always rejected for the first-differenced series, demonstrating all are integrated of order one [I(1)] and not of higher order.

Somewhat surprisingly, the interest rates are found to be I(1). A priori, interest rates are expected to be I(0). This would not present any difficulty for interpreting vector error-correction models that include I(0) interest rates and I(1) employment rates, because in order for the I(1) employment rates to enjoy stable, long-run relationships with any I(0) series, the employment rates would have to be cointegrated. Since more than five cointegrating vectors are found, there must be some cointegration among the employment rates.

Table 2 reports Johansen-Juselius tests for cointegration. The data matrix includes the nine sectoral employment rates and the five interest rates, a total of 14 variables. Results provide very strong evidence of cointegration and indicated very strong, very stable, cointegrated relationships among 13 cointegrating vectors.

Likelihood ratio tests were unable to determine the optimal lag length for the disequilibrium adjustment process. Thirty lags were used to ensure white-noise residuals and unbiased estimates of the long-run structural process measured by the cointegrating vectors. Because the estimate may have used shorter than optimal lag structure, the estimate of the disequilibrium adjustment process is merely suggestive. Attention therefore focuses on the structural or equilibrium process.

The Cointegration Space

With 13 cointegrating relationships identified, it becomes necessary to focus on those that can be given economic interpretation. The normal practice is to examine the largest-dimensioned cointegrated space, but in this case that would explain only one of the 14 variables, which would have little interest. From a Hayekian perspective, two sets of cointegrating vectors are of interest:

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1. Five cointegrating vectors normalized with respect to the five interest rates. These five equations indicate how employment in each of the nine industrial sectors responds to changes in each interest rate.
2. Nine cointegrating vectors normalized with respect to sectoral employment. These nine equations would indicate how changes in the different interest rates affect employment in each sector.

Table 1
Phillips-Perron Test for Sectoral Employment Rates
and Secondary-market
Government Security Rates: 1957:07-2000:01

	Levels		First-differences	
Sector	Intercept	Intercept + trend	Intercept	Intercept + trend
Mining	-0.221	-3.607	-13.351	-13.409
Construction	-0.190	-0.426	-13.639	-13.753
Manufacturing	-1.719	-1.522	-11.571	-11.691
Wholesale	-1.149	-1.065	-14.887	-14.895
Finance, Insur. Real Estate	-2.287	-1.670	-15.568	-15.699
Transportation Utilities	-1.911	-1.822	-31.058	-31.771
Government	-2.440	-1.922	-16.299	-16.498
Services	2.474	-1.214	-17.285	-17.737
Retail	-0.335	-1.366	-16.034	-16.012
Goods prod. Industry	-1.535	-1.536	-11.367	-11.463
Service prod. Industry	-1.261	-1.428	-18.811	-19.024
3-Month T Bills	-2.505	-2.460	-15.271	-15.258
6-Month T Bills	-2.394	-2.355	-15.070	-15.056
1-Year T Bills	-2.292	-2.267	-14.739	-14.723
3-Year T Note	-2.044	-1.985	-14.911	-14.898
5-Year T Note	-1.920	-1.823	-14.602	-14.591
Critical values	1% -3.4567 5% -2.8726 10% -2.5726	1% -3.9961 5% -3.4282 10% -3.1372	1% -3.4568 5% -2.8726 10% -2.5726	1% -3.9962 5% -3.4282 10% -3.1372

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The five-equation model, where the dependent variables are interest rates, is reported in Table 3. Each cointegrated vector is normalized with respect to, and solved for, different interest rates with maturities ranging from six months to five years. Cointegrated vectors are solved for the interest rate to which they are normalized. This facilitates interpretation of the coefficients by producing opposite signs for each coefficient, compared to how most statistical softwares represent cointegrated vectors.

Results are unambiguous. No mixed signs are observed for different-maturity interest rates for any employment sector. Many of the coefficients are statistically significant at conventional levels; thus the reported equations and coefficient estimates possess significant information content. The coefficients are interpreted as inverse elasticities of employment with respect to interest.

Table 2
Tests for Cointegration
Detailed Decomposition of Employment 1959:7-2000:1

Maximum Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized # CE(s)
0.957328	6936.817	233.23†	247.18†	None*
0.890824	5498.500	233.13†	247.18†	At most 1*
0.854506	4488.555	233.13†	247.18†	At most 2*
0.791594	3609.560	233.13†	247.18†	At most 3*
0.755817	2894.429	233.13	247.18	At most 4*
0.698060	2251.544	192.89	204.95	At most 5*
0.627711	1705.473	156.00	168.36	At most 6*
0.594622	1254.906	124.24	133.57	At most 7*
0.472312	843.1676	94.15	103.18	At most 8*
0.392558	551.6694	68.52	76.07	At most 9*
0.291503	324.3541	47.21	54.46	At most 10*
0.198647	167.2121	29.68	35.65	At most 11*
0.132597	66.22935	15.41	20.04	At most 12*
0.002984	1.362635	3.76	6.65	At most 13

* denotes rejection of the null hypothesis at the 1 percent significance level

† denotes critical values derived assuming 10 endogenous series

Johansen-Juselius Likelihood Ratio test indicates 13 cointegrating equations at 5 percent significance level

30 lags were used in the disequilibrium adjustment process

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Table 3
Vector Error Correction Model:
Five Cointegrating Vectors Normalized with Respect to Interest Rates

	C	Mfg.	Con.	Fin.	Gov.	Svs.	Min.	Trns.	Ret.	Whl.
3M	-416.448	-41.5593	-1941.17	-1227.24	-662.917	-96.1149	4440.42	2302.548	2413.742	4012.685
		(85.48)	*(555.48)	*(560.62)	*(183.39)	(68.26)	*(384.06)	*(744.50)	*(504.41)	*(1641.98)
6M	-383.374	-17.1459	-1736.08	-1025.23	-584.134	-74.9355	4373.523	2044.955	2210.23	3416.729
		(76.76)	*(498.76)	*(503.38)	*(164.66)	(61.29)	(344.84)	*(668.47)	*(452.90)	*(1474.32)
1Y	-348.574	-9.89709	-1584.86	-883.025	-520.303	-67.3124	4044.224	1821.103	1996.844	3084.589
		(68.51)	*(445.19)	(449.31)	*(146.98)	(54.71)	*(307.80)	*(596.67)	*(404.26)	*(1315.96)
3Y	-415.88	-87.3708	-2214.64	-1052.7	-652.031	-153.391	3996.892	2523.663	2412.808	4284.866
		(83.82)	*(544.67)	(549.71)	*(179.82)	*(66.93)	*(376.58)	*(730.00)	*(494.59)	*(1610.02)
5Y	-439.355	-114.203	-2520.7	-1123.61	-724.553	-194.72	3901.23	2825.141	2648.53	4593.424
		(91.19)	*(592.53)	(598.02)	*(195.62)	*(72.82)	*(409.68)	*(794.16)	*(538.05)	*(175.51)
Conclusions		← Early procyclical →					← Late countercyclical →			

Log likelihood = 42046.84.
Standard errors in parentheses.
*Indicates significance at the 5 percent level.

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Hayekian Classification of Industrial Sector by Stage of Production

A positive relationship between an employment rate and an interest rate indicates a late stage of production; a negative relationship indicates an early stage. Table 3 indicates that mining; transportation and utilities; retail trade industry; and wholesale trade industry are late stages of production, and that manufacturing; construction; finance, insurance, and real estate; government; and services, are early stages. The one odd finding is that mining is late stage of production.

Cointegrating vectors always have negative coefficients on employment in manufacturing; construction; finance; government; and services, indicating employment in these sectors falls whenever interest rates rise. Negative inverse-elasticities of employment indicate early stages of production.

For manufacturing, none of the negative inverse-elasticities are significant at conventional levels. This result suggests early-stage production but does not provide convincing evidence. In contrast, for construction and government, all the negative inverse-elasticities are statistically significant, providing strong evidence that these are early stages. For services, negative inverse-elasticities are significant for three-year and five-year interest rates, but not for shorter maturities. This indicates early-stage production, but also indicates that employment in services responds only to long-term interest rates, which is not surprising for early-stage production, which must be more roundabout by definition.

For finance, insurance, and real estate, negative inverse-elasticities are significant for three-month and six-month interest rates, but not for longer maturities. This outcome is very interesting. Statistical evidence supports the characterization of the financial sector as an early stage of production, but in contrast to the service sector, resource employment in the financial sector responds only to short-term interest rates. One reason for the difference between services and finance, which are both early stages of production, may be the lack of capital intensity in the financial sector. Service-sector producers maintain large and expensive capital stocks and are less free to adjust the size of their workforces. Financial, insurance, and real estate employers are less dependent on capital equipment and do adjust workforce size very quickly to accommodate changing business climates. In addition, finance employers face demand that responds more directly to short-term interest rates than demand faced by service employers.

Transportation, wholesale trade industry, retail trade industry, and mining have positive inverse-elasticities, which are always significant at conventional levels, across all maturities. This indicates unambiguously that these four sectors are late stages of production. The result is not surprising for transportation, retail, and wholesale, but it is somewhat so for mining. If any sector could be identified a priori as early stage of production, it would be mining. However, many high-value mining activities like petroleum production and field services are clearly late stages, temporally if not conceptually.

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If less aggregated employment data were readily available for mining, it would be possible to test whether this accounts for the late-stage finding and whether the data confirm that refining is later-stage than mining strictly defined. Mining consists of slow and fast activities, just as slow-growing trees represent higher-order, earlier-stage production, and fast-growing trees are lower-order and late-stage. For example, coal may be delivered and burned to heat homes relatively quickly after being mined, with a minimum of intermediate processing, which would constitute late-stage production. The same mine could also produce coal for steel mills and other sophisticated concerns that use the coal in complex and time-consuming industrial processes, a form of early-stage production. Thus the same production can be either early or late stage depending on whether the output is sold to a final consumer or another firm. It may simply be that fast, late-stage mining activities predominate, or, because labor data is examined here, that fast mining activities are merely more labor intensive.

A further possibility may be that when interest rates fall due to credit expansion, mining concerns find it easier to work existing infrastructure to capacity and possibly beyond, increasing both output and labor employment, than to expand the infrastructure. If this were the case, mining firms would act more like late-stage producers, even while producing primarily in early stages. Their behavior would be atypical and largely attributable to the circumstance that the primary way to expand early-stage mining operations would be to construct new mines, not expand existing ones.

Interestingly, standard errors for wholesale are typically over three times greater than for retailing. This supports the common-sense conjecture that retailing is more clearly late stage of production than wholesale.

Sectoral Employment over the Business Cycle

Results can be related to the business cycle. Employment is countercyclical with output in predominantly late-stage-of-production sectors: mining, transportation and utilities, retail, and wholesale. Employment is procyclical in predominantly early-stage-of-production sectors: manufacturing, construction, finance, government, and services. Evidence for procyclicality in manufacturing is weak, as none of the inverse-elasticities is significant, though all are negative. Evidence is much stronger for construction and government. Evidence for procyclicality in services is strong, because it comes from significantly negative three- and five-year inverse-elasticities.

Evidence for finance is curious. Inverse-elasticities are significant and negative for three- and six-month maturities, indicating early-stage production which responds to short-term interest rates. Financial sector employment is procyclical, but only in response to short-term interest rates. Impulse response functions were examined but did not appear to follow any particular structure. The adjustment process is very long–over three years.

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CONCLUSION

This paper presents very strong evidence of cointegration among sectoral employment and interest rates. Very strong evidence is also found for classifying mining; transportation and utilities; retail trade industry; and wholesale trade industry, as late stages of production, and manufacturing; construction; finance, insurance, and real estate; government; and services as early stages.

Cointegration analysis is applied to identify stable long-term relationships among employment rates and interest rates. The cointegrating relationships are stable equilibria entrepreneurial planners have generally effected adjustment toward during the 1959-2000 observation period. These equilibria are not necessarily ever realized, and in light of the long time indicated by the impulse response functions, it appears unlikely they are ever fully realized. The market process consists of entrepreneurial planners effecting adjustment toward a dynamic equilibrium they continuously redefine. The prevailing term structure of interest rates determines resource allocation among early, middle, or late stages of production, in accordance with consumers' time preference and available investment alternatives. Estimates of stable long-run cointegrated vectors using U.S. data provide convincing support for the Hayekian triangle as an encompassing explanation of intertemporal resource allocation and production.

Strong evidence is presented for countercyclicality of mining, transportation and utilities; retail; and wholesale. Employment in these predominantly late stage-of-production sectors generally increases with higher interest rates. In contrast, manufacturing; construction; finance, insurance, and real estate; government; and services, are procyclical. Employment in these predominantly early-stage-of-production sectors falls in response to higher interest rates. Thus, the expansion phase of the business cycle has been marked by a relative redistribution of employment into manufacturing; construction; finance, insurance, and real estate; government; and services out of mining; transportation and utilities; retail; and wholesale. Early-stage industries grow more rapidly during expansions, but they also shrink more rapidly during recessions. During a recession, employment generally falls in late-stage sectors of mining, transportation and utilities, retail, and wholesale but falls more rapidly in early-stage sectors of manufacturing; construction; finance, insurance, and real estate; government; and services.

Empirical analysis and interpretation of employment and interest data based on the Hayekian triangle have proved highly fruitful in revealing new information about the structure of U.S. production. Statistical inference has demonstrated the Hayekian triangle's strong explanatory power. Demonstration of stable, long-run equilibrium relationships among sectoral employment rates and interest rates indicate the data used are amenable to this kind of analysis.

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EXPLAINING JAPAN'S RECESSION

BENJAMIN POWELL

After decades of "miracle" economic growth since World War II, Japan's economy abruptly faltered in 1990 and has stagnated since. I examine the Japanese government's antirecession policies, most of which can be classified generally as either Keynesian or monetarist. The first section is an overview of economic conditions in Japan since 1989. The section section briefly outlines the Keynesian explanation of Japan's recession and reviews Japan's Keynesian policy attempts that have failed to cure the recession. The third section outlines the monetarist explanation and policies that have been tried. The fourth section briefly outlines the Austrian theory of the business cycle and examines Japan's experience for evidence of an Austrian business cycle followed by interventions that have not allowed for market process corrections. The final section contains conclusions.

OVERVIEW OF JAPAN'S ECONOMY 1985-2000

After the September 1985 Plaza Accord, the yen's appreciation hit the export sector hard, reducing economic growth from 4.4 percent in 1985 to 2.9 percent in 1986 (EIU 2001).[1] The government attempted to offset the stronger yen by drastically easing monetary policy between January 1986 and February 1987. During this period, the Bank of Japan (BOJ) cut the discount rate in half from 5 percent to 2.5 percent. Following the economic stimulus, asset prices in the real estate and stock markets inflated, creating one of the biggest financial bubbles in history. The government responded by tightening monetary policy, raising rates five times, to 6 percent in 1989 and 1990. After these increases, the market collapsed.

BENJAMIN POWELL is a Ph.D. student at George Mason University and a social change fellow at the Mercatus Center. I would like to thank James Bennett, Peter Boettke, Alexandre Padilla, and two anonymous referees for helpful comments. Any remaining errors are solely my responsibility.

[1]All statistics contained herein are from the Economist Intelligence Unit *Country Profile Japan* (1996 and 2001) unless otherwise cited.

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The Nikkei stock market index fell more than 60 percent–from a high of 40,000 at the end of 1989 to under 15,000 by 1992. It rose somewhat during the mid-1990s on hopes that the economy would soon recover, but as the economic outlook continued to worsen, share prices again fell. The Nikkei fell below 12,000 by March 2001. Real estate prices also plummeted during the recession–by 80 percent from 1991 to 1998 (Herbener 1999).

Real GDP during the 1990s stagnated, rising only from 428,826 billion yen in 1990 to 469,480 billion yen by the end of 2000.[2] Growth has been negative since 1998. The unemployment rate rose from 2.1 percent in 1991 to 4.7 percent at the end of 2000. Although the unemployment rate may seem low by international standards, the rise to 4.7 percent is significant in Japan, given the cultural and historical precedent of lifetime employment and given that it was never above 2.8 percent in the 1980s. The official unemployment rate is also biased downward because the Japanese government offers "employment adjustment subsidies" to companies that maintain employees as "window sitters" (Herbener 1999).

Table 1 contains selected macroeconomic data, and Table 2 has a timeline of relevant governmental policies undertaken during this period.

The Keynesian Explanation and Solution

In Keynesian macroeconomic theory, business cycle fluctuations are caused by aggregate demand collapsing. Consumption is regarded as relatively stable, so the weakening in aggregate demand is due to the declining investment. Keynes did not precisely explain why investment collapsed; instead he attributed it to "animal spirits" in the business community. If the 1980s asset bubble is ignored, and Japan's stock market is viewed between 1989 and 1992, a massive withdrawal of confidence occurred in the business community and investment collapsed, causing the Nikkei index to fall more than 60 percent. Because the investment decline is not attributed to something specific in Keynesian theory, the theory is difficult to refute. Nevertheless, in Japan, there has been a recession that has not corrected itself following a drop in investment.

In Keynesian theory, prices are "sticky" or rigid in the downward direction, so they do not adjust quickly to restore equilibrium. Although the economy might eventually restore its equilibrium, equilibrium is not inevitable. Even if price adjustments eventually restore equilibrium, Keynesians believe that the process requires too much time. According to Keynesians, to recover from recession, government must pursue active fiscal policies by lowering taxes and raising spending to increase aggregate demand and offset the fall in investment. Keynesians usually prefer increased government spending. Many

[2]Throughout the paper many figures are in yen. Between 1986 and 2000, average market exchange rates ranged from 168.52 yen per dollar (1986) to 94.06 yen per dollar (1995). In 2000 the average market exchange rate was 107.77 yen per dollar (*International Financial Statistics Yearbook* 2001).

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Table 1
Macroeconomic Data

	GDP Growth Rate Percent	Narrow Money Growth Rate Percent	Money + Quasi Money Growth Rate Percent	Discount Rate Percent	Consumer Price Index	Unemployment Rate
1985	6.43	2.92	8.87	5.00	87.4	2.6
1986	4.45	9.40	9.29	3.00	88.0	2.8
1987	4.18	4.62	11.15	2.50	88.1	2.8
1988	6.75	7.93	9.84	2.50	88.7	2.5
1989	6.84	2.30	11.78	4.25	90.7	2.3
1990	7.31	4.31	8.17	6.00	93.4	2.1
1991	5.82	8.71	2.53	4.50	96.5	2.1
1992	2.56	3.75	-0.15	3.25	98.2	2.2
1993	1.01	6.50	2.25	1.75	99.4	2.5
1994	1.08	4.00	3.07	1.75	100.1	2.9
1995	1.19	11.58	2.71	0.50	100.0	3.2
1996	2.56	8.83	2.29	0.50	100.1	3.4
1997	2.12	7.90	3.07	0.50	101.8	3.4
1998	-1.17	4.72	4.13	0.50	102.5	4.1
1999	-0.64	10.50	3.41	0.50	102.2	4.7
2000	-0.14	3.37	1.10	0.50	101.5	

Narrow money = transferable deposits + currency outside deposit money.
Money + quasi money = narrow money + liabilities of banking institutions, comprised of time, savings, and foreign currency deposits.
Source: *International Financial Statistics Yearbook 2001*

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Table 2
Important Policy Events

1987	Official discount rate lowered to 2.5 percent.
1989-1990	Official discount rate raised five times, to 6 percent. Consumption tax of 3 percent for the first time.
1992-1995	Government implements several expansionary supplementary budgets.
1994	Income taxes are temporarily cut.
1995	Official discount rate lowered to 0.5 percent.
FY 1997/97	Budget permits a huge rise in investment and has an unprecedentedly large borrowing requirement.
1997	Consumption tax raised by 2 percentage points to 5 percent.
1998	January: Temporary cut worth 2 trillion yen passed. April: Government announces a fiscal stimulus package worth 16.7 trillion yen, including 4 trillion in tax cuts and 7 trillion yen in public works. September: BOJ announces it will guide the overnight call rate down to around 0.25 percent from just under 0.5 percent. October: Diet passed a package of bank reform bills, allowing it to nationalize unviable banks and establishes a bank recapitalization fund. On the same day the government nationalizes the Long Term Credit Bank. November: Government announced another fiscal stimulus package, worth 23.9 trillion yen.
1999	February: BOJ announces it will guide the overnight call rate down to nearly 0 percent. March: 7.5 trillion yen of public funds injected into 15 large banks. November: Government announces an 18 trillion yen fiscal stimulus package.
2000	August: BOJ announces that it will guide the overnight call rate up to 0.25 percent. October: Government announces a fiscal stimulus package worth nearly 11 trillion yen.
2001	February: BOJ lowers the official discount rate to 0.35 percent and later to 0.25 percent. Overnight call rate is also lowered to 0.15 percent.

Source: Economist Intelligence Unit *Country Profile Japan* (1996 and 2001).

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of the policies in Japan fit the Keynesian prescription, but they have failed to bring the economy out of recession.

Between 1992 and 1995, Japan tried six spending programs totaling 65.5 trillion yen and cut income tax rates during 1994. In January 1998, Japan temporarily cut taxes again by 2 trillion yen. Then, in April of that year, the government unveiled a fiscal stimulus package worth more than 16.7 trillion yen, almost half of which was for public works. Again, in November 1998, another fiscal stimulus package worth 23.9 trillion yen was announced. A year later (November 1999), yet another fiscal stimulus package of 18 trillion yen was tried. Finally, in October 2000, Japan announced yet another fiscal stimulus package of 11 trillion yen. Overall during the 1990s, Japan tried 10 fiscal stimulus packages totaling more than 100 trillion yen, and each failed to cure the recession. What the spending programs have done, however, is put Japan's government in poor fiscal shape. The "on-budget" government spending has caused public debt to exceed 100 percent of GDP (highest in the G7), and even more debt is apparent when the "off-budget" sector is included.

The Keynesian framework permits a liquidity trap in which shifting the LM curve has no effect on aggregate demand. Keynesians can point to failed attempts by the Bank of Japan to reinflate in order to revive its economy (see monetarist section below) as evidence supporting their theory.

The Keynesian policy solution when the economy is in a liquidity trap is to have the government lend directly to businesses instead of creating liquidity in the banking system. Japan has the Fiscal Investment and Loan Programme (FILP), an off-budget branch of the Japanese government worth about 70 percent of the spending in the general-account budget. FILP gets most of its money from the post office savings accounts. Once they collect the money, the funds are allocated to borrowers through the Ministry of Finance Trust Fund Bureau and the bureau's various agencies. Much of this money is not allocated to the most efficient projects. Politicians in the Liberal Democratic Party (LDP) run most of these government agencies. The Economist Intelligence Unit profile states that "FILP money is channeled toward traditional supporters of the LDP, such as those in the construction industry, and without proper consideration of the costs and benefits of specific projects" (EIU 2001, p. 30). Although this Keynesian approach of government direct-lending does avoid the reluctance of banks to lend, it does not aid economy recovery. Funds are not allocated according to market-based consumer preferences, but to the most politically connected businessmen. This leads to a higher cost of borrowing for those seeking private funds, further distorting the economy. Also, because the loans are often highly risky, Japan's fiscal condition deteriorates further. Once FILP and other "off-budget" debts are included, Japan's debt is estimated to exceed 200 percent of GDP (EIU 2001).

One prominent New Keynesian, Paul Krugman, recently recognized that,

> Japan's postal savings system which channels money into public works projects that have little if any social payoff, is monumentally inefficient; so

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> is the practice of rolling over the debts of companies that will never regain profitability and hence keeping capital employed producing what nobody wants. (Krugman 2001)

Krugman argues that this is not a problem as long as Japan is not producing at capacity. He says that to assert otherwise is erroneous because the focus on supply ignores the real problem: inadequate demand. Japan's problem, however, is not inadequate aggregate demand but a structure of production that does not meet consumers' particular demands. Producing things that nobody wants and propping up malinvestments cannot possibly help any economy. This policy is equivalent to the old Keynesian depression nostrum of paying people to dig holes and fill them. Neither policy will revive the economy because neither forces businesses to realign their structures of production to match consumer demands.

Krugman offers another policy solution. Because New Keynesians do not strictly prefer fiscal policy over monetary policy, Krugman recommends "unconventional monetary expansion, with the Bank of Japan buying dollars, euros, and long-term government bonds; it also involves accepting and indeed promoting mild inflation and a weak yen. I could explain why this would probably work, but what's the point? It's not about to happen" (Krugman 2001). Krugman should not think that this could not happen, because it is similar to what occurred from mid-1997 to mid-1998, and this approach did not work. During that period the BOJ's holding of commercial paper went from zero to $117 billion (Herbener 1999, p. 14). The Ministry of Finance and BOJ both bought government bonds from private holders increasing the amount the government owned to $2.22 trillion, which is 53 percent of the market for government bonds, while at the same time promoting a weaker yen (Herbener 1999). The Japanese economy was not stimulated out of its recession but instead experienced the two most negative years of GDP growth in the decade.

Krugman's policy recommendations are a result of his belief that Japan is in a liquidity trap. Although Krugman recognizes the problems in Japan's banking system and thinks that the banks need to be reformed, he believes the failure of broad monetary aggregates to expand along with narrow aggregates is not due to the banking problems but is occurring because Japan is in a liquidity trap. Although he recognizes that current inflation is ineffective in a liquidity trap, he thinks the major obstacle is a credibility problem. If the central bank could credibly promise to continue to inflate in the future, Japan would be able to increase the aggregate demand and revive its economy. He recommends passing a law requiring the central bank to pursue at least 4 percent inflation rates for 15 years (Krugman 1998).[3] Central banks, however, do not have a credibility problem when promising to inflate. The history of central

[3]Krugman is not convinced of the actual numbers because he thinks that more empirical work needs to be done. He does think that the policy itself is correct and that Japan should commit to a minimum policy of at least a decade-long sustained inflation.

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banks is one of continual inflation of the money supply and erosion of their currency's purchasing power.[4] Japan's government debt, in excess of 100 percent of GDP, makes any policy announcement to inflate all the more credible, because inflation reduces the burden of the debt that must be paid back. Indeed, given the history and incentives of central banks, the Japanese people should already rationally expect Japan to continue to inflate its money supply in the future, regardless of policy announcements.

Krugman's policy recommendations would only make Japan's problems worse. Any fiscal stimulus package only serve to maintain the existing structure of production against the preferences of consumers. Even worse, a policy of continual inflation only distorts the interest-rate signal from consumers to businesses and results in more malinvestments that will eventually have to be liquidated (see section on Austrian theory below).

While Keynesian theorists could plausibly point to evidence that the source of Japan's recession is consistent with their theory, many Keynesian policies have failed to revive Japan's economy. Massive spending and lending packages have been tried over the past decade. By focusing on aggregate demand, Keynesian theory overlooks Japan's real problem: a mismatch between the existing structure of production and consumers' specific demands. The Keynesian spending programs have not only failed to pull Japan out of its recession, but they have also placed the government in a weak fiscal position and distorted the economy further away from consumer preferences.

The Monetarist Explanation and Solution

The Monetarist School, like the Keynesian, has no trouble finding a cause for Japan's recession. Monetarists blame recessions on a contraction in the money supply or a slowdown in the growth rate. In 1987 the discount rate was lowered to 2.5 percent to stimulate domestic demand. An asset price bubble followed. To stop the bubble, the discount rate was raised five times, to 6 percent during 1989 and 1990, slowing lending, and the bubble burst. Since the monetary contraction, Japan's economy has been in a recession. Monetarists can argue that the BOJ contracted the monetary expansion too quickly and caused the economic slowdown, much like Milton Friedman's story in the *Great Contraction* regarding America's Great Depression.

Traditionally, monetarists have recommended reinflating after a monetary collapse to avoid a continuing depression. Monetarists recommend this because they have traditionally viewed the LM curve as relatively steeply sloped and the IS curve as flatter. This branch of monetarism has seen its policies implemented and fail in Japan.

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[4]For example, the U.S. dollar performed only 1/25 of the service in 1999 that it performed at the beginning of the century (Wood 1999). For more on the history of what government has done to the value of money see Rothbard (1990) and Wood (1999).

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Japan's expansionary monetary policy failed to achieve recovery. From a high of 6 percent, the discount rate has been lowered to 4.5 percent in 1991, 3.25 percent in 1992, 1.75 percent during 1993-1994, and 0.5 percent during 1995-2000. This dramatic easing of interest rates has not stimulated Japan's economy, but the failure of interest-rate easing is not necessarily a failure of monetary theory. Japan's banking system is widely regarded as in need of restructuring. Much of the stimulus that reduced rates could provide has not been realized because the banking community has been increasing its liquidity instead of increasing its lending. Many banks have bad loans with collateral now worth only 60-80 percent of their value when the loans were made. Some banks are merging, and others have been nationalized. Such problems have contributed to the ineffectiveness of monetary policy.

Some monetarists argue that interest rates should be ignored and that the money supply itself must be controlled. Milton Friedman has advocated a monetary rule of expanding the money supply at an annual rate of 3-4 percent. During the 1990s, the Japanese money supply grew steadily. M2 grew from 507,526 billion yen in 1991 to 629,664 billion yen in 2001, an increase of about 25 percent over the decade, or 2.5 percent a year. Monetarists who advocate a monetary rule would likely point out that Japan should have been following a monetary rule before the recession. The rapid expansion and then contraction of the money supply, the monetarists would claim, caused the asset bubble and its subsequent bursting.

Controlling the money supply can be difficult, especially in view of the condition of Japan's banking system. From mid-1997 to mid-1998 Japan increased its monetary base by 10 percent, but the broader monetary aggregates rose by only 3.5 percent (Herbener 1999). This is what Keynesians mistakenly call a liquidity trap. The lack of credit expansion, even after expansion of the monetary base, is not due to investors expecting that future interest rates will rise, but is instead caused by the enormous amount of bad debt in the banking system that makes banks unwilling to lend (Herbener 1999).

In Japan's recession not all monetarist approaches can be dismissed as a complete failure like Keynesian theory can. However, monetarist policies have not helped Japan out of recession.

The Austrian Explanation and Solution

The Austrian theory of the business cycle is more accurately a theory of an unsustainable boom than a theory of a depression (Garrison 2001, p. 120). Japan's experience in the late 1980s is what Austrian theory describes as an unsustainable boom that must collapse. The recession or depression that follows an artificial boom is not something to avoid but is essential to the alignment of consumer time preferences and the structure of production. According to Austrian theory, the late 1980s boom was artificial, caused by the Bank of Japan's expansionary monetary policy. The 1985 discount-rate reduction began the central bank-induced boom. Following this reduction, the Bank

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of Japan expanded the money stock by an average of 10.5 percent per year from 1986 until 1990 (*International Financial Statistics Yearbook* 2001).[5] While this action would not concern other schools of thought, because of price-level stability at the time, Austrian theory identifies monetary expansion as the problem. "The market process set in motion by credit expansion does not depend in any essential way on there being a change in the general level of prices" (Garrison 2001, p. 71). In Austrian theory, the rapidly expanding money stock artificially lowers interest rates, signaling businesses to invest more in longer-term and more capital-intensive projects. The problem is that these lower interest rates do not reflect consumers' time preferences. The Economic Intelligence Unit profile notes that the boom of the late 1980s "encouraged consumers to spend and companies to invest as never before" (EIU 2001). From 1987 to 1990, private consumption increased an average of 5.6 percent per year while at the same time gross fixed capital formation increased by 10.63 percent per year (*International Financial Statistics Yearbook* 1994). Consumption and investment are substitutes in the short run. If the economy is operating on its production possibilities frontier, consumers can consume more and invest less, or invest more and consume less, in the short run. The economy was both consuming and investing more in the late 1980s because the central bank was distorting the interest-rate price signals from consumers to producers. This can only be sustained in the short run while the central bank pursues ever increasing rates of monetary inflation.[6] Once the monetary inflation slows or contracts, the boom abruptly ends and a recession begins. During the recession, the boom's malinvestments are liquidated and consumer time preferences are restored to the structure of production. This began to happen in Japan in 1990. When the central bank stopped the monetary expansion, the stock market dropped, investment dropped, and recession followed—as Austrian business cycle theory predicts.[7]

The Austrian description of the boom's timing and cause seems similar to the monetarist theory, but there is an important difference. Both schools agree that the contraction of the monetary expansion triggered the recession, but the monetarists view this contraction as something that should be avoided so that prosperity can continue. In Austrian theory, the contraction is necessary to restore balance to the real economy—the preceding expansion is the problem. This is one reason why the two schools differ in their policy recommendations.

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[5]The money stock used here is comprised of narrow money—transferable deposits + currency outside deposit banks, and quasi money—the liabilities of the banking institutions comprised of time, savings, and foreign currency deposits.

[6]The economy is able to temporarily operate beyond the production possibilities frontier because the frontier is defined as *sustainable* combinations of consumption and investment. For more on this, see Garrison (2001, pp. 70-71).

[7]Readers unfamiliar with Austrian business cycle theory can see Mises (1998, pp. 535-84; 1980) or Hayek (1960) for the classic statements of Austrian business cycle theory.

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Garrison has said, "the Austrian theory of the business cycles is a theory of the unsustainable boom. It is not a theory of depression per se." He then states, "The story of depression and recovery, which may involve reflation, devaluation, debt restructuring, and/or capital controls, is unique to each individual episode of each economy" (Garrison 2001, p. 120).

In Austrian theory, the recession is necessary, and once it sets in and bad investments are liquidated, the economy will self-correct. After 10 years, there are still no signs of economic correction. Austrian theory recognizes that time is required for economic self-correction but that the correction can only occur if the market process is allowed to work. Rothbard (2000) summarized the Austrian policy position this way:

> If government wishes to alleviate, rather than aggravate, a depression, its only course is laissez-faire—to leave the economy alone. Only if there is no interference, direct or threatened, with prices, wage rates, and business liquidation will the necessary adjustment proceed with smooth dispatch. Any propping up of shaky positions postpones liquidation and aggravates unsound conditions. (p. 185)

As described above, Japan's government has done everything but leave the economy alone and allow self-correction.

The many Keynesian fiscal stimulus packages have shifted the structure of production to satisfy government demand instead of allowing the market to adjust to consumer demand. In particular, much "pump priming" expenditure has been public works spending that benefits the construction industry—a large, politically powerful segment of the Japanese economy, accounting for 7.6 percent of GDP and 9.7 percent of the labor force. The ruling Liberal Democratic Party, which has been the dominant political party in Japan since 1955, has seen construction companies as natural allies and has cultivated their support over the years through generous public works programs (EIU 2001). Because of the close relationship between the construction industry and the LDP, many of the spending packages have emphasized public works. Almost half of the $16.7 trillion in the April 1998 fiscal stimulus package was for public works. Then, in November 1998, $66.4 billion of the $196 billion stimulus package was spent on public works (Herbener 1999). Overall, between 1991 and 2000, the construction industry received orders from the government valued at 59,054.7 billion yen—this sum is 30.12 percent of the total value of all construction industry orders for that period. The favors from the LDP have paid off for the construction industry. The Economist Intelligence Unit profile notes, "Generous Public works programmes have allowed many unviable construction companies to remain in business" (EIU 2001, p. 40). By keeping otherwise unviable construction companies in business, the government has hindered the market's process of adjustment by maintaining a capital structure that does not reflect consumers' desires. If the market process was allowed to work, capital and labor would be reallocated from the construction industry to other industries.

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The agricultural industry also has political influence over the LDP. The political voice of the agricultural lobby is enhanced by Japan's electoral system, which, by failing to take account of the massive postwar shift of the population to the urban areas, makes votes in the sparsely populated rural areas worth more than those in the urban areas (EIU 2001). This has resulted in a wide array of import quotas and price-support programs. Barriers to price adjustment, such as these, harm the market's ability to adjust to consumer demands and correct itself out of the recession.

The central bank has tried to reinflate, which has only further distorted the interest-rate price signals, slowing the market's ability to correct. Despite the massive interest-rate cuts, broader monetary aggregates have not responded because of the poor condition of the Japanese banking industry. For example, when the BOJ increased the monetary base 10 percent from mid-1997 to mid 1998, M2 + CDs increased only 3.5 percent (Herbener 1999). The asset contraction that the Japanese banks have experienced on their balance sheets has not only hindered attempts of the BOJ to reinflate but also has interfered with their ability to serve as financial intermediaries. The collapse in real estate prices and the economic slowdown that has put many borrowers out of business have left Japanese banks with a huge overhang of problem loans backed by collateral worth sometimes 60-80 percent less than when the loans were taken out (EIU 2001). Japan's financial institutions are estimated by the Financial Services Agency to have 31.8 trillion yen in problem loans, and even this estimate is widely believed to underestimate the extent of the problem (EIU 2001). In addition to these problems, banks that invested in the real estate boom have seen values fall 80 percent from 1991 to 1998 (Herbener 1999). Banks invested in the stock market have seen the Nikkei average drop from 40,000 yen in 1989 to under 12,000 yen by March 2001. Because of the increase in bad loans with poor collateral and the fall in other asset values, increased funds injected from the BOJ or additional deposits from savers have been used to hold as cash reserves against bad loans, instead of being used to extend loans to worthy borrowers.

The government's answers to the problems in the banking industry are bailout funds and nationalization. In late 1998, a $514 billion bailout fund was set up, with $214 billion designated to buy stock in troubled banks, and $154 billion to nationalize, restructure, and liquidate failed banks (Herbener 1999). Nationalization and bailout funds only serve to prop up unsound financial institutions, delaying the needed restructuring, which would allow them to serve their function as financial intermediaries again. The market deals with unsound banks by allowing bank failures, mergers, acquisitions, and restructuring. After market-based corrections, banks would serve in their roll as financial intermediaries again. Some market corrections have taken place. Most bank mergers, however, have occurred among smaller, regional banks that have not had access to bailout funds (Herbener 1999). One large merger was announced that would combine Dai-Ichi Kangyo Bank Ltd., the Industrial Bank of Japan Ltd., and Fuji Bank Ltd., into one company with $1.2

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trillion in assets (Herbener 1999). Until the government stops intervening with bailout funds and nationalization, the process of larger bank failures and mergers will be delayed, extending the time that the banks are unable to function as efficient financial intermediaries.

The Japanese government has gone to great lengths to prevent the liquidation of the boom's malinvestments. Japan set up a 20-trillion-yen credit guarantee fund to ease credit availability for companies. The Economic Intelligence Unit profile indicates "funds disbursed under the programme are often going to companies that are not creditworthy and that would otherwise go bankrupt" (EIU 2001). According to Austrian theory, these are precisely the companies that must go bankrupt if the economy is going to recover. When a company goes bankrupt, real resources are not lost; capital and labor are reallocated to other companies in line with consumer preferences. The government controls and allocates more and more loans through the Fiscal Investment and Loan Program (FILP) (EIU 2001). FILP gets its funding from the postal savings system, which had 254.9 trillion yen in funds at year-end 2000–accounting for around 35 percent of total household deposits (EIU 2001). Government lending is usually made to political allies of the Liberal Democratic Party, such as the construction industry, resulting in wasteful, loss-producing projects that do not reflect consumer preferences. In one instance, a $5.3 billion loan was channeled into building a high-tech bridge-tunnel spanning Tokyo Bay–a project that will, by the government's own estimates, suffer losses until the year 2038 (Herbener 1999). This type of lending does not reflect consumer preferences.

The government has also worked to prop up the stock market by purchasing shares when the Nikkei stock average drops below 12,000, to maintain Japanese banks' capital adequacy ratios as defined by the Bank for International Settlements. Banks are allowed to count up to 45 percent of unrealized profits on share holdings toward their tier-two capital; these ratios are in jeopardy whenever the Nikkei falls below 13,000 (EIU 2001). Artificially holding up stock prices hinders market forces from reasserting themselves, further delaying capital reallocation and economic recovery.

In *America's Great Depression*, Rothbard (2000) wrote, "there is one thing the government can do positively [during a depression], however: it can drastically lower its relative role in the economy, slashing its own expenditures and taxes" (p. 22). The Japanese government raised its consumption tax from 3 percent to 5 percent in 1997. There were income tax cuts in 1994, and in 1998, the top income tax rate was decreased from 65 percent to 50 percent and the corporate rate from 46 percent to 40 percent. Despite some tax cuts, Japan has maintained a high level of government spending. Government-services spending increased 9 percent from 1995 through 1999 (EIU 2001). Tax decreases cannot have their full beneficial effects if they are not matched by corresponding decreases in government spending. If more money is left in the hands of private citizens, some of it will be saved, helping to justify the lengthened structure of production, whereas all government spending is

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consumption.[8] The increase in the consumption tax and the failure to reduce government spending along with the other tax cuts delay recovery from recession. Government spending seeks to maintain the existing production structure, against the demands of consumers, instead of permitting its liquidation and reconstruction (Herbener 1999).

The repeated fiscal stimulus packages with public-works spending, the large amount of savings controlled by the postal savings system and allocated through FILP, and the efforts to prevent bank and business failures all have prevented the market process of recovery from working. These repeated government interventions have maintained the existing structure of production, delaying its necessary alignment to the particular demands of consumers.

Structure of Production Evidence for ABCT

In *Prices and Production*, Hayek (1960) theorizes,

> But when it is remembered that the fall in the rate [of interest] will also change the relative profitableness of the different factors of production for the existing concerns, it will be seen to be quite natural that it should give a relative advantage to those concerns which use proportionately more capital. (p. 86)

Garrison (2001) wrote,

> A less steeply sloped hypotenuse [of the Hayekian triangle] illustrates the general pattern of reallocation in the early stages of the structure of production. Some resources are bid away from the intermediate and relatively late stages of production and into the early stages. (p. 72)

He added, "During the period of over-production, investment decisions were biased by an artificially low rate of interest in the direction of long-term undertakings" (Garrison 2001, p. 73).

Keeler (2001) has drawn the conclusion that,

> A distinctly Austrian hypothesis is that when the market rate is depressed below the natural rate, investment in more capital intensive production processes increases relative to investment in less capital intensive production processes. (p. 133)

In addition to Keeler's hypothesis, the investment would occur in industries that are not only more capital intensive but are also in the earlier stages of production. If Austrian business cycle theory describes Japan's recession, the boom's largest malinvestments will have taken place in capital-intensive industries, in the earlier stages of production. During the recession, the greatest contractions should occur in these industries, if the Austrian business cycle theory applies.

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[8]See Rothbard (2000, p. 20, n. 15) for an explanation of why government spending is always consumption.

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The mining industry is capital intensive and one of the stages of production farthest from eventual consumption. Manufacturing is also relatively capital intensive and one of the earlier stages of production, although less so than the mining industry. Wholesale and retail are relatively less capital intensive and are in the later stages of production. Finally, the services industry is in the latest stages of production and is not very capital intensive. Although there would be individual exceptions within each category, broadly speaking, these industries fall in order from earliest to latest stages of production, and from

Table 3
Industry Gross Domestic Product Growth Rate

	Mining	Manufacturing	Wholesale and Retail	Services
1990	23.2	6.8	8.5	7.2
1991	-2.7	5.3	6.1	5.7
1992	-1.8	-1.4	1.2	4.8
1993	-4.4	-4.0	-2.3	3.4
1994	-15.5	-1.3	-0.4	0.9
1995	-0.4	1.6	4.3	2.2
1996	0.7	2.2	2.4	5.2
1997	-6.6	1.9	3.9	3.8
1998	-8.3	-5.0	-4.0	4.0
1999	-9.6	-2.6	-4.4	0.5

Source: Economist Intelligence Unit *Country Profile Japan* (1996 and 2001).

most to least capital intensive, as: mining, manufacturing, wholesale and retail, and services. During Japan's recession, the contractions in these industries lend support to Austrian business cycle theory (see Table 3).

In 1990 there was great expansion in the mining industry, but, when the artificial boom ended, the hardest-hit sectors throughout the decade have been in precisely the order Austrian theory would predict. The GDP growth rate, by industry sector, has been worst in the mining industry, followed by manufacturing, and then wholesale and retail. Finally, the service industry has experienced the smallest contractions.

Conclusion

Austrian theory, like the Keynesian and monetarist theories, can give a reason for the start of the Japanese recession. Unlike the other schools, the Austrian policy recommendation of laissez-faire has not been tried. One prediction that

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Austrian business cycle theory provides has been accurate. The industries in the earliest stages of production have had the worst growth rates throughout the entire decade.

Japan's development model over the past 50 years has emphasized government intervention and planning in the economy. During its recession, government interventions have manifested themselves as fiscal stimulus packages involving large amounts of public works, increases in the monetary base, interest-rate cuts, bailouts and nationalization of some banks, direct government lending to businesses, and increases in government spending despite some tax cuts. These interventions have tried to maintain the existing structure of production preventing the necessary market processes from working to correct the artificial boom's malinvestments.

Japan has experienced an Austrian business cycle. The initial boom was created by a central bank-induced monetary expansion. Because of repeated interventions, the economy has not recovered. The greatest malinvestments took place in capital-intensive industries in the earlier stages of production. For Japan's economy to recover the government must stop intervening in the economy and allow the market process to realign the structure of production to match consumer preferences.

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AUSTRIAN ECONOMICS, NEOCLASSICAL ECONOMICS, MARKETING, AND FINANCE

WALTER BLOCK, WILLIAM BARNETT II, AND STUART WOOD

If the neoclassical model of perfect competition were an accurate portrayal of reality, or even nearly so, there would be no need for advertising, marketing, brokering,[1] or, indeed, any other institution which addresses itself to the lack of knowledge about goods or services on the part of producers or consumers.[2] But these professions patently do exist. They are alive, healthy,

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[1]With regard to the condition of "complete knowledge," Stigler (1965, pp. 258-59) maintains that brokers can exist in perfect competition: "Or let there be indefinitely many brokers in any market, and let each broker know many buyers and sellers, and also let each buyer or seller know many brokers–again we have perfect competition." This follows immediately upon his statement that:

> If each seller in a market knows any *n* buyers, and each seller knows a different (but overlapping) set of buyers, then there will be perfect competition if the set of *n* buyers is large enough to exclude joint action . . . [hence] knowledge possessed by any one trader need not be complete; it is sufficient if the knowledge possessed by the ensemble of individuals in the market is in a sense comprehensive.

However, "the" price would have to be higher if brokers are involved in order to cover the expenses thereof. Thus, it would seem that in a "perfectly competitive" market, the services of brokers would be competed out of existence, as would the services of any other middleman. This is not to deny his point that no single individual need have complete knowledge directly, provided that he does so indirectly, through appropriate overlapping sets of incomplete knowledge.

[2]Stigler (1965, p. 259) also maintains, contrary to the standard version of neoclassical theory, that there is a role for entrepreneurs in perfect competition:

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and productive. We must conclude from this that perfect competition is a highly unrealistic model[3] that can play little or no role in an understanding or explication of economic reality.[4] The neoclassicals, including Stigler, take the benefits of the perfect competition model to be "predictions that will have wide empirical validity" and the provision of "normative properties that will allow us to judge the efficiency of [governmental] policies" (Stigler 1965, pp. 261-62). The only "cost" of the perfect competition model they recognize is that it is unrealistic. To them, the benefits obviously outweigh the costs, and therefore the perfect competition model is and should be the dominant one in economic theory. While not denying that some of the work by economists working in the neoclassical tradition has been useful, even seminal, in adding to our understanding of the real world in some cases,[5] we maintain that the perfect competition model is unnecessary to these developments[6]; moreover, it has wrought far more harm than good. In what follows, first we identify both the positive and normative essences of this model. We then critique them, pointing out the real costs thereof.

> Since entrepreneurs in a stationary economy are essentially brokers between resource owners and consumers, it is sufficient for [perfect] competition if they meet this condition. That is, resource owners and consumers could dwell in ignorance of all save the bids of many entrepreneurs.

We repeat the problem pointed out in note 1 above: "the" price would have to be higher if entrepreneurs/brokers were involved in order to cover the expenses. Therefore, it would seem that in a "perfectly competitive" market, the services of entrepreneurs/brokers would be competed out of existence, as would the services of any other middleman.

[3]As Stigler (1965, pp. 261-62) states:

> We wish the definition [of perfect competition] to specify with tolerable clarity—with such clarity as the state of the science affords—a model which can be used by practitioners in a great variety of theoretical researches, so that the foundations of the science need not be debated in every extension or application of theory. We wish the definition to capture the essential general content of important markets, so the predictions drawn from the theory will have wide empirical reliability. And we wish a concept with normative properties that will allow us to judge the efficiency of policies. That the concept of perfect competition has served these varied needs as well as it has is providential.

[4]For a critique of the perfectly competitive model, see Kirzner (1973); Mises (1966); Armentano (1972, 1982, 1991); Armstrong (1982); Block (1977, 1982, 1994); DiLorenzo (1997); Boudreaux and DiLorenzo (1992); High (1984/1985); McChesney (1991); Rothbard (1970); Shugart (1987); Smith (1983).

[5]See, for example, the work by Coase (1937) on the theory of the firm and by Williamson (2000) on transactions costs. See also, Cheung (1983) and Dauterive and Sibley (1990); for an Austrian perspective on the firm which does not rely upon perfect competition, see Machlup (1967); Lewin and Phelan (1999); Foss (1994); Klein (1999).

[6]The unrealistic assumptions of perfect competition are unnecessary for supply and demand analysis.

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Perfect Competition

What is perfect competition, and how does this doctrine create the difficulties outlined above? Machovec (1995), locating the origin of perfect competition, states that:

> it sprang to life to satisfy Cournot's pursuit of definitional rigour, and eventually became the principal instrument of the *Elements* (Walras). The perfectly competitive model did not make its real debut as an analytical tool until the 1920s–after the profession had digested Frank Knight and after the influence of Alfred Marshall had waned. Until that time, the way economists reasoned about the market was "structurally different." (p. 12)

and:

> the seeds of the perfect competitor were being sown by the upcoming, mathematically-oriented members of the profession, and this is the conception which, during the 1920s, came to dominate the new cerebrum of economics. The development of the perfectly competitive model can be said to have emanated from a unique seed planted in 1838 by Cournot–an atypical seed which did not even germinate until 1874 (in Walras) and finally reached maturity nearly a half century later in Knight. (p. 241)

In subsequent years it became ubiquitous within micro and managerial economics, spreading out to a whole raft of other subdisciplines of economics such as labor, international, public policy, public finance, industrial organization, etc. It has also taken the textbook world by storm,[7] making it impossible for any student to be untouched by this simplistic and misleading model.

As a positive model, the core of perfect competition is a market in which the goods and services are homogeneous[8]; each firm is so tiny that it produces so insignificantly small a proportion of the total output that any increases in its offerings cannot effect price even by a minuscule iota[9]; and full information is available to all market participants about all goods and services.[10]

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[7]We defy the reader to unearth even *one* textbook that does not accord the perfectly competitive model a central position in economics, apart from Gordon (2000).

[8]Ultimately, this implies that there can be only one good in the economy; if there are any more than one, the cloven hoof of heterogeneity seeps in.

[9]This, too, is highly problematic as it would be true only in the case where a firm produced, literally, a zero amount, and continued to do so. Consider the opposite case. Assume there is a small automobile manufacturing concern that increases its annual output from two to three units. As long as there were a negatively sloped demand curve, it is not *possible* for there to be a zero reduction in price.

[10]It is important to stress that the assumption of full, complete, and accurate–indeed, perfect–information in a single, perfectly competitive market would mean that no firm in that market, qua its role in that market, could in any way benefit in the slightest from the

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As a normative standard, the essence of the perfectly competitive model is that in equilibrium, a quantity Q is produced and sold at which Q the price, P, equals the marginal revenue, MR, which equals, the marginal cost, MC, which equals the average total cost, ATC; that is, $P = MR = MC = ATC$. This is held to be the normative standard because of the following. First, as P measures the marginal "social benefit" and MC the marginal "social cost,"[11] $P = MC$ insures that Q is the socially optimum quantity; additional units of output will be produced and sold so long as the additional benefits thereof exceed the additional costs, and no unit will be produced if the cost exceeds its benefits. Second, as MR measures the benefits to the producer (that is, the private benefits), $MR = MC$ ensures that Q is the privately optimum (a.k.a. the profit maximizing) quantity. Third, $MC = ATC$ ensures Q is the optimum quantity in the sense that no other level of output could be produced at a lower per-unit cost. Fourth, $P = ATC$ ensures that normal profits are earned. There are no above-normal ("economic") profits to induce existing producers to increase the level of production or induce others to enter the market, nor are there below-normal profits (that is, "economic" losses) to induce existing producers to decrease the level of production or to exit the market; therefore the market is in (short- and long-run) equilibrium when operating at this optimal level of output, Q. Fifth, $P = MR$ ensures that the marginal social benefit (P) and the marginal private benefit (MR) are the same, and therefore there is no divergence between the condition for social optimality ($P = MC$) and that for private optimality ($MR = MC$).

It is not hard to understand how economists enamored of mathematical formalism and model building could be seduced by a model with such properties. What a standard—virtual perfection!

Perfect Competition as a Positive Model

The primary critique of perfect competition as a positive model is that it is so unrealistic as to be misleading.

Its main drawback as a normative standard is that no real-world firm, industry, or market can satisfy it and therefore governmental intervention to regulate the behavior of every firm, industry, and market is warranted, subject only to an analysis of each proposed intervention to ensure that the benefits exceed the costs.[12]

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use of financial markets and institutions, or from advertising and marketing. There would be only the firm, its customers/users, and its suppliers/producers of resources. No middlemen of any type allowed.

[11]This ignores divergences that might arise on the supply side; that is, so-called market failures as a result of negative externalities. In contrast, negative externalities are a property rights problem; that is, they arise because the legal system either does not acknowledge or does not enforce property rights. See Cowen (1988).

[12]This determination necessarily admits of at least some level of arbitrariness, given the essentially subjective nature of much in economics, particularly including so-called cost benefit analysis. On this, see Barnett (1989, pp. 137-38); Buchanan and Thirlby

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Neoclassicals use an instrumentalist defense of perfect competition as a positive model, maintaining that it is but a mere endpoint of the analysis, the analogue of an ideal gas in chemistry or a frictionless system in physics. No one expects to actually encounter the situation depicted in this model; it serves only as a useful simplification of the real world in order to facilitate analysis. One reaches a "first-cut" analysis of economic activity using the perfect competition model; then, with that understanding, more accurate progress can be made by removing the attendant less-realistic, simplifying assumptions. Just as the assumptions of the ideal gas must be dropped by the physicist near the condensation point in order to understand the observed phenomena involving intermolecular attractions and condensation, so also must the simplifying assumptions of perfect competition be dropped in order to understand the observed marketing behavior. States Stigler (1965):

> Finally, we should notice the most common and the most important criticism of the concept of perfect competition–that it is unrealistic. This criticism has been widespread since the concept was completely formulated and underlies the warm reception which the profession gave to the doctrines of imperfect and monopolistic competition in the 1930's. One could reply to this criticism that all concepts sufficiently general and sufficiently precise to be useful in scientific analysis must be abstract: that, if a science is to deal with a large class of phenomena, clearly it cannot work with concepts that are faithfully descriptive of even one phenomenon, for then they will be grotesquely undescriptive of others. This conventional line of defense for all abstract concepts is completely valid, but there is another defense, or rather another form of this defense, that may be more persuasive.
>
> This second defense is that the concept of perfect competition has defeated its newer rivals in the decisive area: the day-to-day work of the economic theorist. Since the 1930's, when the rival doctrines of imperfect and monopolistic competition were in their heyday, economists have increasingly reverted to the use of the concept of perfect competition as their standard model for analysis. Today the concept of perfect competition is being used more widely by the profession in its theoretical work than at any time in the past. The vitality of the concept is strongly spoken for by this triumph.
>
> Of course, this is not counsel of complacency. I have cited areas in which much work must be done before important aspects of the definition of competition can be clarified. My fundamental thesis, in fact, is that hardly any important improvement in general economic theory can fail to affect the concept of competition. But it has proved to be a tough and resilient concept, and it will stay with us in recognizable form for a long time to come. (pp. 266-67)

(1981); Buchanan (1969); Mises (1966); Rothbard (1993, 1997); Cordato (1989, pp. 229-44); DiLorenzo (1990, pp. 180-95); Garrison (1985); Gunning (1990); Kirzner (1986); Mises (1966); Rizzo (1980, pp. 641-58; 1979, pp. 71-90); Rothbard (1979, pp. 91-96; 1993; 1997); Schmidtchen (1993, pp. 61-84).

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In reality, the expectation is for some sort of imperfect competition, such as monopoly, duopoly, or oligopoly. In these cases, there is no need to assume full information and thus to assume away the possibility of marketing. States Kirzner in this regard: "It follows that, since perfect competition precludes selling effort, where advertising or other selling effort is in fact engaged in, this must be attributed to the monopolistic elements in the market structure" (1973, p. 164).

However, while imperfect competition is far more realistic than its "perfect" counterpart regarding such things as size of firm, homogeneity of goods, entry costs, etc., it is not–or, rather, need not be–as far as *information* is concerned. That is, it is still possible to combine the assumption of complete information with imperfect competition. Say what you will about monopolistic competition, it remains an *equilibrium* model for the neoclassicals. The imperfectly competitive model is an end-state theory, not one of process, and disequilibrium.[13] As such, it continues to be compatible with the assumption of full information. Thus, while advertising *may* be compatible with imperfect competition, this is not necessarily the case. It is still possible for advertising to be ruled out of court by the assumptions, not only of perfect competition, but of imperfect competition as well, in any of its varieties.

A better tack may be the one taken by Stigler (1961). This economist posits not full knowledge of everything under the sun, as with perfect competition, but, rather, of entire probability distributions.[14] In this more sophisticated vein, however, there is no information available concerning individual events, except for the fact that they belong to a given probability distribution.

> Under these assumptions, there is now room for advertising in the neoclassical world, but only of the informational variety.[15] Suppose you move to a new city and want to purchase a home. You will be very interested in ascertaining prices, quantities available, location, etc., of specific houses. Each day of search is expected to bring you lower prices, ceteris paribus, for a dwelling of a given quality, but, to put this in Stiglerian terminology, at a decreasing rate (for example, the marginal benefit curve declines with time). On the other hand, the money costs of staying, temporarily, in a motel are constant, while the inconvenience of living out of suitcases increases as time goes on (the marginal cost curve is an increasing function of time). Eventually, the rising marginal costs meet the falling marginal gains, and you end your search and finally make a purchase. You are willing to buy information through advertising, or from brokers, since in this case you save search time (by shifting the marginal benefit curve to the left). You gain less new information every day, which results in lower marginal savings, since, with the aid of your informational mentor, you

[13]See on this Mises (1966) and Kirzner (1963, 1973, 1975, 1979, 1985, 1986, 1989).

[14]That is, nothing whatsoever is known about any given observation or occurrence, but everything is known about the universe of which it is only one small sample.

[15]For a critique see Kirzner (1973, pp. 151-80) and Block (1991, pp. 68-79; 1997, pp. 221-35).

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> start out with more knowledge. If you had full information, and in perfect competition, the marginal benefit curve would be coincident with the *Y* axis, and your search time would be zero.

This is indeed an improvement on perfect competition, but the Stigler search model has drawbacks of its own. The weakness is that it covers only "name, rank, and serial number" kinds of information. Advertising of this sort would impart knowledge about when the house was last roofed, the capacity of the air conditioner, or the warranty on the boiler. But this does not even begin to scratch the surface of the full-bodied, robust advertising we see all around us every day, replete with Michael Jordan and Bugs Bunny, and supermodels hawking everything from tractors to underwear to diamonds.

Ludwig von Mises had this to say about that type of marketing:

> The consumer is not omniscient. He does not know where he can obtain at the cheapest price what he is looking for. *Very often he does not even know what kind of commodity or service is suitable to remove most efficaciously the particular uneasiness he wants to remove.* At best he is familiar with the market conditions of the immediate past and arranges his plans on the basis of this information. To convey to him information about the actual state of the market is the task of business propaganda.
>
> Business propaganda must be obtrusive and blatant. It is its aim to attract the attention of slow people, to rouse latent wishes, to entice men to substitute innovation for inert clinging to traditional routine. In order to succeed, advertising must be adjusted to the mentality of the people courted. It must suit their tastes and speak their idiom. *Advertising is shrill, noisy, coarse, puffing, because the public does not react to dignified allusions.* It is the bad taste of the public that forces the advertisers to display bad taste in their publicity campaigns. The art of advertising has evolved into a branch of applied psychology, a sister discipline of pedagogy.
>
> Like all things designed to suit the taste of the masses, advertising is repellent to people of delicate feeling. This abhorrence influences the appraisal of business propaganda. Advertising and all other methods of business propaganda are condemned as one of the most outrageous outgrowths of unlimited competition. It should be forbidden. The consumers should be instructed by impartial experts; the public schools, the "nonpartisan" press, and cooperatives should perform this task. (1966, p. 320; emphasis added)

The point is, Stigler cannot account for anything "shrill, noisy, or coarse." Yet, this describes most real-world advertising. Therefore, the search model cannot explain this aspect of economic reality. Moreover, while Stigler's contribution is at least relevant for those goods and services which the consumer is already aware of, it does not at all apply to those commodities about which "often he does not even know." Yet, *before* the advent of Mozart, or rap music, or the hula hoop, or the horseless carriage, or the personal computer, or email, which of us was walking about the shopping mall of the day, searching

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for these items? No one, of course. But this only indicates the paucity of the neoclassical explanation of this phenomenon, as compared to the Austrian explanation.

Let us put this in other words. The weakness of the Stiglerian-University of Chicago perspective on this matter is that it applies only to goods and services for which the consumer already has a demand; namely, it is limited to that which the buyer already knows about *prior* to being subjected to a marketing campaign. This search model can function reasonably well with regard to items such as houses, cars, and TV sets, which are already fully well known to the potential buyer. But unless the customer is in the act of shopping, already intending to purchase, holding off only until he determines the best deal, the Stigler model is helpless to account for his behavior. As such, it cannot take into account advertising, the purpose of which is not merely to inform, but to *motivate*.

Kirzner (1973) explains:

> What I wish to point out is simply that to treat *all* informational aspects of advertising *exclusively* as providing a separate distinct service ("information") fails utterly to perceive the crucially important role of the entrepreneur as one who *brings available opportunities to the awareness of the consumer*. (p. 155)

> But consider now the case of the man who has no inkling that a certain commodity exists. We may, of course, *imagine* his demand curve for this commodity once its existence has become known to him. But if we wish to discuss the commodity in its unknown state we are simply unable to talk of the consumer's demand for it. It is not that his demand curve coincides with the price axis; that he would buy none of it at any given price. It is rather that the very notion of demand has no place under these circumstances. It is nonsense to discuss the upper limit of the price this consumer is willing to pay for this unknown commodity; it is nonsense to discuss the quantity he would be prepared to purchase at a given price. These discussions refer to the eagerness with which a consumer wished to pursue perceived opportunities. With no opportunities *perceived* the notion of consumer demand has no meaning. (p. 158)

Perfect Competition as a Normative Standard

Perfect competition is defended as a normative standard on the grounds of the model's optimality conditions. That is, the optimality conditions provide standards by which to gauge the performance of real-world firms and markets, and thereby to assist in the development and enforcement of governmental economic policies; for example, antitrust.

> The vitality of the competitive concept in its normative role has been remarkable. One might have expected that, as economic analysis became more precise and as the range of problems to which it was applied widened, a growing list of disparities between the competitive allocation

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> of resources and the maximum-output allocation would develop. Yet to date there have been only two major criticisms of the norm. . . . The first is that the competitive individual ignores external economies and diseconomies, which—rightly or wrongly—most economists are still content to treat as an exception to be dealt with in individual cases. The second, and more recent, criticism is that the competitive system will not provide the right amount (and possibly not the right types) of economic progress, and this is still an undocumented charge. The time may well come when the competitive concept suitable to positive analysis is not suitable to normative analysis, but it is still in the future. (Stigler 1965, p. 266)

Because perfect competition is a normative standard, as well as a positive one, neoclassicals' defenses of perfect competition as a positive model and as a normative standard become conflated. Real-world behavior is compared to perfectly competitive "behavior" with reality found wanting, thereby justifying the potential desirability of ubiquitous governmental intervention in the real world, subject only to the outcome of a cost-benefit study in each particular proposed intervention. Therefore, the comparison of perfect competition to the ideal-gas and frictionless-system models is a disanalogy. Unlike an ideal gas or a frictionless system, which are strictly positive models, perfect competition is a normative standard as well; for example, it serves as the linchpin of antitrust legislation. To the extent that a firm deviates from the strictures of this model, it is liable to become enmeshed in the machinations of the Justice Department. In contrast, no one is indicted for failure to adhere to the niceties of the ideal gas.

Unacknowledged Problems with Perfect Competition

The neoclassicals rationalize and justify the use of the highly unrealistic perfect competition model on the ground that it is useful for predictions and as a standard of behavior and that the benefits of the uses outweigh the costs of unrealistic assumptions. However, other costs of this model go unacknowledged. First, perfect competition is applied more widely than is appropriate, in situations where the reality is so different from the assumptions that not only is it not useful, save for the purpose of making the analysis mathematically tractable, but the conclusions reached are positively misleading. There is no better example to illustrate this claim than the billions of dollars that have been wasted both prosecuting and defending against antitrust lawsuits, and the vast harm supposedly antimonopolistic laws have done to the structure of the economy.[16]

[16]For the case in favor of the complete elimination of antitrust legislation, see Anderson, William et. al 2001, pp. 287-302); Armentano (1972, 1982, 1991); Armstrong (1982); Block (1977, pp. 271-79; 1982; 1994, pp. 35-70); DiLorenzo (1997, pp. 43-58); Boudreaux and DiLorenzo (1992, pp. 81-96); High (1984/1985, pp. 21-34); McChesney (1991); Rothbard (1970); Shugart (1987); Smith (1983, p. 23).

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Second, past generations of economists have been, and future generations are being, trained along these lines rather than in praxeology and market process analysis. The costs are the value of the alternative uses to which the resources used for such modeling would possibly be put, precluding greater progress in economic theory and history.

Third, the perfectly competitive model is embedded within the very bowels of neoclassical economics. It pervades all else. It carries all before it. It completely overwhelms even "transactions costs analysis," which has also swept the economics profession like a firestorm in terms of the grip it has over the profession of economics. When business students or those earning MBAs are subjected to economics of the mainstream variety, they cannot help but take it in to their worldview—which will tend to undermine their openness to, and ability to function in, the real world of poor information, advertising, marketing, etc.

Moreover, virtually all graduate schools of business incorporate into their core curricula courses in marketing, advertising, brokering and intermediation, financial and otherwise. However, also included in the business foundation are economics courses that are invariably predicated upon the neoclassical model of perfect competition. Thus, there is an inner contradiction in all such curricula: by including marketing, etc., business schools at least tacitly indicate the importance placed upon such disciplines. But by admitting a school of economics whose principal model disparages them, they take back with one hand what they have given with the other. Worse, economics (micro and managerial economics are the worst offenders in this regard) is often made a prerequisite for these other business courses. This is to add insult to injury. It is to lay a foundation that is at loggerheads with the rest of the edifice.

When you build a house, the foundation undergirds the upper floors. These upper stories, in turn, rest upon the foundation. If there is any incompatibility between these two parts of the edifice, the entire entity is to that extent weakened. If they are incongruent with one another to a sufficient extent, the top part can even topple over.

It is much the same with regard to the offerings of the business school (and, of course, all other) curricula. The prerequisites, or the business core, serve much the same function with regard to these other academic offerings as does the foundation of the house to its upper stories. Indeed, this series of courses is even often called the business "foundation." The student first enrolls in these required courses, and the other ones in the curriculum, those which come later, are built upon what came before. As in the case of the home, if there is any disparity between these two sets of courses, if there is a lack of "fit" between them, then the entire curriculum is less efficient than it otherwise would be. Its purpose—to confer knowledge, experience, and training upon the student, and to inspire him to attain these ends on his own—is to that extent compromised.

Typically, the contributions of economics to the business core consist of microeconomics, macroeconomics, managerial economics, and statistics. The

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difficulty with mainstream microeconomics (this holds for managerial economics as well), as we have seen, is that it is predicated upon the assumption of either full information about everything, or, in its more sophisticated Stiglerian manifestation, upon full knowledge about all possible probability distributions. In *either* case, precious little scope remains for robust marketing, advertising, brokering, intermediation, financial insights, management, etc. But these, to a large part, are precisely of what the remainder of the business curriculum consists.

All graduate schools of business include a course of study of economics in their curricula; there are no exceptions known to the present authors. As it happens, there are in principle good and sufficient reasons for this state of affairs. For one thing, economics is itself part and parcel of business. No holder of the MBA degree, to say nothing of the D.B.A. or Ph.D. in business, can be considered fully qualified if he is ignorant of the teachings of the dismal science. For another, there are large complementarities between economics and other business disciplines such as accounting, management, finance, marketing, real estate, etc. This interdisciplinary support is a two-way street: economics undergirds these other subjects, and, in turn, they support it.[17]

Thus, all is not as well as it could be in the area of business curricula. The mainstream economic school of thought typically represented in a business school is almost totally incompatible with at least one of the other disciplines, marketing. Specifically, virtually all economists located at schools of business practice neoclassical economics; not for them are the niceties of the Austrian School with its emphasis on the entrepreneur, advertising, marketing, etc. To put this another way, for the mainstream economist, the role of the entrepreneur virtually vanishes (Kirzner 1973). For the other departments in the business school, in sharp contrast, the entrepreneur is crucial.

If the contribution of economics to the business foundation undercuts the very need for the advanced electives, if the former is incompatible with the latter, in what sense can it be said that the one can serve as an appropriate or relevant prerequisite for the other? Like the poorly constructed edifice, a curriculum of this sort is at best unsteady and, at worst, it continually threatens to topple over that which it is expected to support.

Our views on this matter my be summarized as follows:

> the typical neo-Marshallian economics course is lacking in usefulness for the typical business student. In the business curriculum, one needs an economics that actually makes real references to choices made by those in business, as opposed to an economics that is so heavy in mathematical and geometric analysis that it is so rigid as to be nearly useless for someone who looks to use economics as a business tool.[18]

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[17]Our emphasis in this paper, however, is in only one of these directions: that leading from economics to the other business courses.

[18]This is part of a comment made by an anonymous referee for this journal.

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What Can Be Done?

What can be done to alleviate this situation? A quick and easy solution would be to eliminate microeconomics (and managerial economics) from the business curriculum. One advantage of such a plan is that this would save scarce and therefore precious academic resources. Another is that advertising and marketing courses, etc., would no longer be undermined by their ostensible foundations.

The drawback, of course, is that economics, at least ideally, can indeed contribute to the education of the business student, and significantly so. Indeed, it is probably no exaggeration to claim that the graduate business major, let alone the MBA who is completely innocent of economics, is far less prepared for a business career than he either could or should be. Without economics, the future business leader will have to do without a handle on profits, interest rates, unemployment, the business cycle, economic incentives, innovation, economic freedom, present discounted value, and the list goes on and on.

A better solution, therefore, would be not to delete economics from the business curriculum entirely, but rather to eliminate only that school of thought which is incompatible with the other business disciplines. In a word, to substitute for an economics based on the simplistic assumptions of full information one that is not so puerile or unrealistic.

One potential candidate for this role is, of course, Marxism. But to substitute this variety of economics for the neoclassical would be to jump out of the frying pan and into the fire. It would be particularly unfortunate and unwarranted in an era that has seen the fall of the Berlin Wall, the collapse of the economy of the U.S.S.R., and the radical transformation of the People's Republic of China. This is not a promising strategy, moreover, in that Marxism is even less supportive of private business than is neoclassical economics. According to the socialist dogma, there shouldn't *be* any businessmen at all; the government should manage the economy.[19]

A far better candidate is the praxeological school, or Austrian economics. It is far more receptive to business and private enterprise than Marxism,[20] and it certainly exceeds neoclassical economics in this regard. In terms of the phenomenon with which we have been concerned–the assumption of full information–Austrianism is far superior to mainstream economics. For one thing, the concept of perfect competition is entirely absent from it, indeed, alien to it. Praxeologists have specifically criticized the distinction between perfect and imperfect competition.[21] For another, Austrians have written supportively and

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[19]For an Austrian critique of socialism, Marxism, and central planning, see Hayek (1954, 1948); Hoppe (1989); Mises (1981, 1972, 1966); Böhm-Bawerk (1959; see particularly part 1, chap. 12, "Exploitation Theory of Socialism-Communism"); Block (1992, pp. 260-86); Boettke (1993; 1990; 1994, pp. 267-93); Boettke and Anderson (1993, pp. 101-18; 1997).

[20]This is the understatement of the century.

[21]See references cited in footnote 4.

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analytically[22] about advertising, marketing, entrepreneurship, and a whole host of concepts integral to a proper business-school education.[23] A more moderate suggestion would be not to replace all neoclassical economists in business schools with Austrians, but instead to adopt an "affirmative action" program with regard to the latter. In this way, at least there would be some increased representation in our nation's business colleges of a school of thought that is conducive to their overall mission.[24]

Finally, because the model is so unrealistic, both economists and the discipline of economics lose credibility with businessmen and the public.

It seems, then, that taking into account these problems, as well as those of unrealistic assumptions and a harmful standard, the costs far outweigh any benefits to be had from the perfect competition model that could not be had from supply-and-demand analysis without the detritus of the perfect-competition assumptions.

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[24]For a particularly effective Austrian defense of advertising, combined with a critique of Galbraith's views on this subject, see Hayek (1967).

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Principles of Economics: An Austrian Critique

Munir Quddus and Joseph Horton

The first edition of Gregory Mankiw's *Principles of Economics* (1997) textbook has not only made the book's author rich and famous, but has also gained notoriety for textbook authors in general and for the discipline of economics in particular. The author reportedly received $1 million in advance, the largest advance ever paid to a textbook author. The press reported that the publisher, no doubt to justify this rich advance, initially targeted 20 percent of the economics textbook market for the first edition. Many experts opined that the publisher had a good chance of succees.

For some of us who teach undergraduate economics and who have used Mankiw's text, the media excitement is not surprising. There are several innovations in this book that help set it apart and put it in front of the several dozen other economic principles textbooks on the market, including the most famous of all modern economics textbooks, Professor Paul Samuelson's *Economics* (1998). Most notably, despite their titles, Mankiw's text is one of the few true principles-level economics textbooks that is built squarely around a set of fundamental principles of economics. Mankiw, in the first chapter, introduces "ten principles of economics." Throughout the text, the author refers back to one or more of these principles. It would have been better if the book had only ten chapters or subsections, each dealing primarily with one of these principles. In addition to the ten principles or "theory" chapters, some other chapters could have been added as "application" chapters. However, this approach would be a radical change, given that most other textbooks currently in the

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market include 20 to 30 chapters, with the initial chapters being micro and the latter chapters being devoted to macroeconomic topics.

What is Austrian economics? According to the *Encyclopedia of Economics* (1982, pp. 38-42), two of the founding fathers of the tradition are Carl Menger and Eugen von Böhm-Bawerk. Other important members of the school include Ludwig von Mises, F.A. Hayek, Gottfried Haberler, Fritz Machlup, Oskar Morgenstern, Friedrich von Wieser, and Paul Rosenstein-Rodan. Among contemporary economists, one can count Israel Kirzner, Murray N. Rothbard, Walter Block, and Ludwig Lachmann in this tradition. Although, in the public's eye the Austrian tradition is synonymous with an unfailing support for the free market, the tradition differs from other schools more by the method of analysis than by a specific set of policy ideas.

The Austrian School is certainly one of the most influential schools outside the dominant neoclassical tradition. Many Austrian ideas have been incorporated into the current neoclassical orthodoxy. The basic Austrian point of view about what economics is and how an economist does economics has not, however, been accepted by other economists. Austrians are a priorists. The test of a theory is not its predictive power, but rather its assumptions and the logic by which conclusions are drawn from the assumptions. If both are correct, so is the conclusion. It follows that to empirically test a theory is meaningless.

Since economics is the science of choice, the unit of interest is the individual who makes the choice. Aggregation is logically impossible. The idea that there is some social welfare function that can be maximized is incorrect. If something is to be maximized, it is the ability of individuals to coordinate their activities. Virtually all modern Austrians associate this ability with individual freedom (the absence of government interference with the free market).

Economics is viewed as a science, but one inherently different from the physical sciences. The methods of the physical sciences are not appropriate to the social sciences. In particular, mathematics and statistical methods are inappropriate in economics. Some Austrians are, however, more flexible on this than others.

Here we discuss briefly Mankiw's ten principles of economics and offer a critique of these principles à la the Austrian School of economics. A textbook in economics completely based on principles of modern Austrian economics is yet to be written.[1] When such a textbook is written, perhaps this discussion will help the author design the text. We would strongly recommend to the author that the first chapter of the yet-to-be-written textbook be devoted to the ten or so basic principles of economics, with the rest of the book simply enhancing the explanation and application of these principles. This design would well serve students in introductory economics classes by emphasizing

[1]A book that comes close to meeting this goal is Roger Garrison's recent intermediate macroeconomics textbook, *Time and Money: The Macroeconomics of Capital Structure* (2001).

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the logical consistency and design of economics. Students would carry an understanding of these principles in their intellectual tool kit for the rest of their lives. Unfortunately, too many authors of introductory textbooks in economics take the diametrically opposite approach of cramming topics into their books. In doing so, they lose the important message that economics is a coherent field of inquiry with a worldview that can be extremely useful in our everyday lives.

MANKIW'S TEN PRINCIPLES OF ECONOMICS

The ten principles are divided into three categories in the first edition (1997, p. 14). The first includes four principles governing individual choice. The second includes three principles that are relevant to understanding social interaction among economic agents. The last category includes three principles on how the economy as a whole works.

HOW PEOPLE MAKE DECISIONS

1. People face trade-offs.
2. The cost of something is what you give up to get it.
3. Rational people think at the margin.
4. People respond to incentives.

HOW PEOPLE INTERACT

5. Trade can make everyone better off.
6. Markets are usually a good way to organize economic activity.
7. Government can sometimes improve market outcomes.

HOW THE ECONOMY AS A WHOLE WORKS

8. A country's standard of living depends on its ability to produce goods and services.
9. Prices rise when the government prints too much money.
10. Society faces a short-run trade-off between inflation and unemployment.

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The *first* principle (people face trade-offs) is standard enough to be considered an "economic law" (2001, p. 4). Mankiw begins with the commonly accepted adage, "there is no such thing as a free lunch." Economists of all persuasions firmly believe in the principle of scarcity and its implication—the necessity of making choices as individuals and as a society. The Austrian economists would certainly agree that this is an important principle that helps explain individual behavior.

The *second* principle in Mankiw's book (the cost of something is what you give up to get it) is the widely accepted notion of opportunity cost in economics. Mankiw writes, "The opportunity cost of an item is what you give up to get the item" (p. 6). Austrian economists would largely agree that the correct method of measuring costs is to try to measure the value of the foregone opportunities as opposed to measuring only the out-of-pocket expenses (accounting costs). However, Austrians have made innovative contributions to the measurement of the opportunity cost concept that are not fully appreciated in the mainstream literature. According to Alchian (1997),

> Clarification of the logical role of the concept of cost in order to explicate clearly the distinction between the two ideas—the value of forsaken alternatives and the so-called undesirable attributes—was begun by the Austrian school of economics in the nineteenth century and was further developed by Frank Knight (1924). (p. 304)

Moss writes, "The cost of a specific action to a decision maker is the next best opportunity he gives up when he chooses that course of action over others" (1976, p. xi). Austrians generally hold that all costs are subjective and, therefore, cannot be measured (Rothbard 1993, pp. 291-94; 1997, pp. 269-71). The opportunity cost of college will never be equal for any two individuals, as the subjective valuation of their time effort would differ. If both individuals happen to be unskilled, the mainstream economist would use the minimum wage to impute the value of their time. However, many Austrians would disagree on the grounds that, being subjective, opportunity costs cannot be measured. The only way to measure the cost of time spent is to ask the individual (subjective evaluation), and even then it may not be possible to accurately measure opportunity costs. According to some Austrians, opportunity cost is an important concept if human behavior is to be understood.[2]

Regarding the *third* principle, Mankiw writes, "In many situations, people make the best decisions by thinking at the margin" (2001, p. 6). Later in the same section we find, "A rational decision maker takes an action if and only if the marginal benefit of the action exceeds the marginal cost" (p. 7). Virtually

[2]"[T]he connection between recorded, or accounting, costs and those costs that influence human choice may be so tenuous that statistical laws founded on the former will reveal very little about human action itself" (Moss 1976, p. xi).

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identical statements can be found in all the major textbooks in economics. Most modern Austrian economists would accept the principle that rational individuals think at the margin. After all, the original Austrian, Carl Menger, is widely known as one of the founding fathers of what is called the "Marginalist" School in the history of economic ideas. Menger, Walras in Switzerland and Jevons in England independently proposed that people calculate the benefits (positive utility) and costs (negative utility) in small increments. Indeed, the resulting impact of this principle was a revolution in the history of economic ideas. The emphasis of classical economics on objective costs, resources, and factors of production (supply side) was overtaken by the writings of the marginalists, who placed the burden of price determination on subjective factors.

Mankiw's *fourth* principle is that people respond to incentives. He writes, "Because people make decisions by comparing costs and benefits, their behavior may change when the costs or benefits change" (2001, p. 7). The writings of modern Austrian economists such as Hayek and Mises have had substantial impact on mainstream economics on this point. Human beings make conscious actions toward achieving their goals. Humans respond to both positive and negative incentives, which influence the actions they take. In fact, the equilibrating process in the market, sometimes described as a discovery or a "learning process" by the Austrian economists, is a reflection of individuals responding to changes in incentives. Austrians stress the market process and the role of entrepreneurs in this process. The usual approach to equilibrium takes available choices (resources and ends) as given. Austrians take the market as a process of discovering resources and even ends, rather than as a matter of selecting from a menu of already known possibilities. The market is also a process of learning and forming new expectations as old ones are disappointed.

A *fifth* economic principle espoused in Mankiw's textbook is that trade can make everyone better off. This is presented as the first principle of social interaction. The term trade is of course used in its broadest sense. It includes all transactions and exchanges that take place between economic agents, whether they are in the same geographical area or across nations. The author writes, "Trade between the United States and Japan is not like a sports contest, where one side wins and the other side loses. In fact the opposite is true: Trade between two countries can make each country better off" (pp. 8-9). Adam Smith and other classical economists argued that free trade is welfare-enhancing, since it improves the allocation of resources and increases specialization that makes the trading partners more productive and efficient. The Austrian author of a textbook would have no problem in accepting this principle. This principle of free trade is an important underpinning of the Austrian School of economic thought. For the Austrians, the main benefit of free trade is that it is mutually advantageous. Restrictions on trade prevent individuals' purposeful human action to benefit themselves. At least ex ante all parties to trade expect to benefit, otherwise why participate in the trade?

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The other advantages of free trade consistent with Austrian tradition are that free trade enhances freedom and enlarges the economic pie.

Among the principles of social interaction, the second principle (*sixth* principle overall) is that markets are usually a good way to organize economic activity. Mankiw writes, "Yet, despite decentralized decision making and self-interested decision makers, market economies have proven remarkably successful in organizing economic activity in a way that promotes overall economic well-being" (p. 9). Some Austrians may disagree with the wording in this statement and prefer to state the principle as: Markets are always a superior way to organize economic activity. Right or wrong, over the years the Austrian School has developed a reputation of being a devotee of the free markets. It is widely considered (hard core of the Austrian research agenda) that free and competitive markets are the most efficient known mechanism for allocation of scarce resources and for optimum efficiency. This is not to say that they believe in the notions of equilibrium so dear to modern neoclassical economics. The Austrians believe that, with or without equilibrium, the market process brings about the best outcome for participants and for the society as a whole. Here, too, the basic ethical or value consideration for Austrians is not so much the efficiency of markets as it is their freedom-enhancing nature. So most Austrians would agree that markets are the best way to organize commerce and economic activity.

Mankiw's *seventh* principle is: Government can sometimes improve market outcomes. Most academic economists and textbook authors agree with Mankiw that this principle is important. He writes, "The invisible hand usually leads the markets to allocate resources efficiently. Nonetheless, for various reasons, the invisible hand sometimes does not work" (p. 11). He further writes, "There are two broad reasons for a government to intervene in the economy: to promote efficiency and to promote equity" (p. 11). However, some economists in the Austrian tradition would disagree. For most Austrians, there is need for the government, but only in the political arena—that is, to maintain defense, to define property rights, and to defend these through law and order and the court system.[3] There is no role for the government in the economic arena. The public-sector economic activity by definition would be suboptimal. There is a broad set of writings in the Austrian tradition that would emphasize this point. Government action leads to collectivization and usurps the efficient learning process in the market. Collectivization leads to suboptimal economic outcomes. Government by its very nature uses force or the threat of force. State intervention in the form of planning and control necessarily reduces voluntary exchange and redistributes wealth. However, it is impossible even for a giant computer to figure out the market prices, because the data that would have to be fed into the computer simply does not exist outside the market. This results in a net decrease in economic welfare.

[3]There are some significant exceptions to this rule.

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No government entity, no matter how efficient or technologically sophisticated, can mimic the process of learning that goes on in the market. This is a sophisticated argument that needs in-depth reading in the Austrian tradition to be grasped fully.

It can also be said, however, that among Austrians, there is no core agreement on this and a range of opinions exist. A case in point is Wieser, who identified three major reasons for state intervention, depending on the common difficulty of private calculation: first, when the individual is too weak to either defend his country or to maintain a system of courts and police; second, where profits are too small and too uncertain to encourage private action; third, when economies are backward and capitalists are scarce. It becomes the state's duty to fill the gap.[4]

Under the heading of aggregate economic activity, the first principle (*eighth* overall) is that a country's standard of living depends on its ability to produce goods and services. This principle simply states that the concept of gross domestic product–or, more accurately, that of per capita GDP–is the best measure of the wealth of a nation and the living standards of its people. This point does not imply that GDP is a perfect measure of income or that income (even wealth) is the best measure of well-being. "Almost all variations in living standards are attributable to difference in countries' productivity–that is the amount of goods and services produced from each hour of a worker's time" (p. 12). Where would the Austrians stand on this principle? Members of the Austrian School generally tend to be critical of economic aggregates such as GDP. They contend that there are several problems with the use of prices, most of which are not in long-run equilibrium, to measure the value of a diverse collection of goods and services. Even if some collective measure such as GDP is to be used, the Austrians would present the explanation somewhat differently. First, they would decry the implied importance given to the productive side of the economy. Supply is only a response to the market. In other words, the traditional difference between technical efficiency and economic efficiency must be highlighted. The correct measure is not the sheer ability to produce lots of goods and services (based on resources and technology), but the freedom of economic agents to choose and to organize their resources and budgets. A nation well ahead in its productive ability and living standards could stagnate and eventually decline if high taxes or other restrictions were to undermine the market process. The rules of the game and the institutions are exceedingly important in the dynamic process of capitalist growth. Mankiw notes in this section that factors other than labor productivity, such as labor unions and minimum wage laws, cannot explain gains in workers' real incomes over the last quarter century (p. 11). The real hero is the rising productivity of American labor. However, this begs the question of what

[4]Lekachman writes "Wieser was far removed from the orthodox laissez faire and still further removed from the apologetics of which his school was frequently accused. Wieser was a good example of the political neutrality of the marginalist tools" (1959, p. 282-83).

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is behind this increase in productivity (and technological improvements) and why productivity growth seems to have stalled in recent decades. According to Austrians, we need to look at the institutions and at the laws to see if markets are being increasingly constrained. Consider the following statements: "It is not the physical existence of capital on the which prosperity of society's members depends but rather the position these goods play in the plans of acting individuals." And also, that "the meaning of such [statistical] measurements must be constantly checked against the underlying human plans and purposes that they allegedly represent" (Moss 1976, p. xii).

The *ninth* principle is squarely in the macroeconomic tradition: Prices rise when governments print too much money. This monetary explanation of inflation is now widely accepted in mainstream economics. Mankiw writes, "In almost all cases of large and persistent inflation, the culprit turns out to be the same–growth in the quantity of money" (2001, p. 14). He reinforces the argument by discussing the episodes of hyperinflation in Germany and the 1970s inflation in the U.S. The Austrian theory of the business cycle is considered to be one of the Austrians' most important contributions to modern economic science. According to this theory, most booms are caused by the central banks producing too much liquidity. This excess liquidity causes a wedge between the nominal and the real interest rates. This sends incorrect messages to the investors, who are led to overinvest, causing an artificial boom that eventually collapses as the error is corrected. To the extent that price rises are part of the boom, the explanation is consistent with the limited idea expressed in the short-term negatively sloped Philips curve: as inflation occurs, production usually increases, causing unemployment to fall temporarily. However, this is eventually corrected, and in the bust that inevitably follows a boom, falling output or rising unemployment will accompany the disinflation (or deflation).

Austrians often define inflation as an increase in the money supply rather than as an increase in the price level. Indeed, the very concept of the price level has overtones of aggregation. Sometimes, however, a distinction is made between price inflation and money inflation. A critical point in Austrian theory is that inflation of the money supply results in malinvestment and distortions in relative prices even if price inflation does not result. This differs markedly from the usual textbook presentation.

Mankiw's *tenth* and last principle is also in the modern macroeconomic tradition that, in the short run, society faces a trade-off between price inflation and unemployment. Mankiw states that the Philips curve is a controversial concept, but most economists agree that a trade-off between inflation and unemployment is a reality in the short run because some prices are slow to adjust. The average Austrian likely would not agree to this principle. In the Austrian paradigm, there is no distinction between the short and long term. As far as Hayek and Mises and contemporary Austrian economists are concerned, such a distinction is artificial and unwarranted.

Moreover, if increases in the money supply do result in reduced unemployment, this is merely because the central bank has distorted relative prices

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and some people do not yet realize it. When they realize that their expectations are not being fulfilled, this sets the stage for the contractionary phase of the business cycle. Some Austrians insist that only gold (or the gold standard) constitutes money. On that basis, they argue that monetary policy, by its very nature, is fraudulent.

The (Austrian School) Principles of Economics

A possible reformulation of the principles based on the Austrian critique of neoclassical economics is presented in the table below.

How People Make Decisions

1. People face trade-offs.
2. The cost of something is what you give up to get it.
3. Rational people think at the margin.
4. People respond to incentives.

New Principles:

➔ The entrepreneur is the most important force in the free market.

➔ Value is subjective.

How People Interact

New Principle:

➔ All economic phonomena are the result of human action.

5. Free trade can make everyone better off.
6. Markets are always a superior way to organize economic activity.
7. Government can never improve on market outcomes.

How the Economy as a Whole Works

8. A country's standard of living depends on its ability to produce goods and services, which is closely dependent on economic freedom and institutions.
9. Inflation of the money supply often leads to price inflation and always leads to distortions in relative prices.
10. Government control of the money supply is inherently fraudulent leading to a boom-bust cycle.

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Concluding Remarks

The list of the ten most important principles of economics as supported by the textbook author of Austrian persuasion would have much in common with Mankiw's list of the principles of economics. However, there would be some differences. One difference would be that the Austrian author would likely include the paramount role of the entrepreneur in the market economic process. The Austrian belief is that the entrepreneur is an important catalyst or force in the market. This is true for both the consumer and the production sides. Second, in discussing trade and exchange, the Austrian author would likely add details on the discovery and learning processes in the market. This principle would fill an important gap in contemporary mainstream economics as taught to introductory college students. Third, the Austrian author would restate the principle on the role of the market to read that the markets are always a superior mechanism for resource allocation over planning and government regulations. Fourth, there would also be greater emphasis on the role of the institutions and the laws that impinge on commercial activities. Fifth, in explaining inflation and the short-run trade-off between inflation and unemployment, the Austrian instructor would discuss the business cycle theory, which emphasizes that such cycles are generated when the central bank loses control over the money supply, possibly due to the influence of political forces. Finally, two of the most important insights credited to the Austrians are not on Mankiw's list. These two insights, according to the Austrians, are fundamental to properly understanding economics. These are the principle of human action (all economic phenomena are the result of human action) and value (value is subjective).[5]

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[5]"[T]he subject matter of economics is human action, and a concern with abstract character of action is what defines the economic point of view" (Moss 1976, p. ix).

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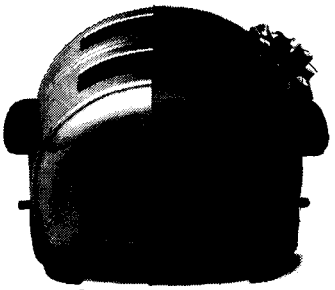

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COMMERCE AND GOVERNMENT: CONSIDERED IN THEIR MUTUAL RELATIONSHIP. BY ÉTIENNE BONNOT, ABBÉ DE CONDILLAC. TRANSLATED BY SHELAGH ELTIS. CHELTENHAM, U.K.: EDWARD ELGAR. 1997.

With the publication of Murray N. Rothbard's monumental work *An Austrian Perspective on the History of Economic Thought* in 1995, contemporary Austrian economists have become aware that they are the modern heirs to a grand intellectual tradition. The first fruit of further research in the Austrian tradition was *15 Great Austrian Economists*, a small volume edited by Randall G. Holcombe in 1999. In the meantime, some predecessors of modern Austrian economics have received more attention. This is the case with Richard Cantillon and, most notably, with Frédéric Bastiat whose bicentenary was celebrated in 2001. By contrast, three major figures have so far been unduly neglected: Friedrich von Wieser (1851-1926), Richard von Strigl (1891-1942), and Étienne de Condillac (1714-1780). In the case of the latter two, their pioneering works in economics have only very recently been translated into English and have not yet penetrated the contemporary communities most akin to their messages.[1] This holds true in particular for Condillac's *Commerce and Government*, a work that is indeed nothing less than one of the great milestones in the history of economic science and on equal footing with the works of Cantillon, Say, and Bastiat.[2] The ideas contained in this book not only have a strong affinity with Austrian economics, but they also had a considerable and direct impact on the development of Menger's thought. Menger acknowledged this influence in his

[1]Of Richard von Strigl's four books, all of which are important contributions to economics, only his monograph on capital theory has been translated. See Strigl (2000).

[2]Rothbard (1995, pp. 409ff., 526f.) seems to have known Condillac's work only from secondhand sources. Otherwise he probably would have given him far more prominence in his history of economic thought. *Commerce and Government* is in fact the first full-blown axiomatic-deductive treatise of economics based on a subjective-value theory. As a systematic work it is far superior to Cantillon's *Essay on the Nature of Commerce in General* (1734), which work Rothbard presents as the foundational treatise of economic science.

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Principles of Economics by quoting Condillac more than any other foreign author except for Adam Smith.[3]

When Étienne Bonnot, Abbé de Condillac published *Le commerce et le gouvernement* in 1776, he already had an established international reputation as one of the most brilliant philosophers of his time. But whereas his philosophical work was widely acclaimed and is still studied today, his economic thought has been systematically neglected. Almost 140 years ago, Macleod (1863, pp. 543f.) expressed the hope that the historiography of economic science would now finally do justice to Condillac's treatise, which he believed was infinitely superior to the famous, but confused and contradictory, *Wealth of Nations*, which had appeared in the same year. But this hope was premature: the first English translation of *Le commerce et le gouvernement* didn't appear until 1997.

In part, this neglect is due to the fact that the book was Condillac's only work on economics and that he did not have the time to build up a school of followers. But as Shelagh and Walter Eltis explain in their very useful introduction "The Life and Contribution to Economics of the Abbé de Condillac," the main reason was that Condillac was not affiliated with the professional economists of the Quesnay School. France, in 1776, was the homeland of economic science and the mainstream school of the time was the Physiocrats. Their writings were quickly translated into English and thus vaulted into the Anglo-Saxon world. But not so in the case of Condillac, who was no disciple of François Quesnay. The work of an outsider *Le commerce et le gouvernement* was not deemed worthy of translation. And so it came that the only work that had the power to stem the tide of the new anti-subjectivist economics à la Adam Smith, was largely ignored in the nineteenth century, at a time when a great number of Anglo-Saxon economists still read French, and even more so in the intellectual dark ages of the twentieth century.

Before highlighting some of Condillac's insights about specific points of economic theory, let us emphasize a fundamental contribution through which he anticipated modern Austrian economics. *Commerce and Government* is indeed an exercise in deductive-axiomatic analysis of human action. Condillac starts by considering the most general economic phenomenon—value—and then proceeds step by step to study prices, pricing, markets, exchange, the market process, wages, wealth, the economics of cities, property rights, money, interest, equilibrium prices ("true prices"), monopoly, the supremacy of consumption in steering production, the allocation of resources, and taxes. Having thus completed the analysis of the free market, he turns, in the second part of the book, to studying the impact of various government interventions on the operation of the market economy. He calls these interventions "blows

[3]Menger quoted Condillac 6 times, while quoting Bastiat (2), Mill (3), Ricardo (5), Say (5), Senior (2), Smith (9), and Turgot (5). Even more to the point, whereas most of the Smith quotes are negative, Menger quotes Condillac only approvingly.

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directed against commerce" (*atteintes portées au commerce*) and points out, again and again, their nefarious consequences.

Hence, the general structure of the book exactly parallels that of the best modern Austrian writings on political economy. And Condillac bases his radical free-market conclusions on precisely those facts that Jean-Baptiste Say, Frédéric Bastiat, Ludwig von Mises, and Murray Rothbard have emphasized too: that exchange is productive,[4] that consumption steers production,[5] and that every production is a market for other productions ("Say's Law"). In a chapter entitled "How Needs, in Multiplying, Give Birth to the Arts, and How the Arts Increase the Mass of Wealth," Condillac states (pp. 104f.):

> It is the farmer who provides all the primary material. But such primary material, as would be useless and without value in his hands, becomes useful and obtains value when the artisan has found the way to make it serve the needs ["usages"] of society.
>
> With each skill that begins, with each advance it makes, the farmer thus acquires new wealth, because he finds value in a product which previously had none.
>
> This product, given value by the artisan, gives a fresh spur to commerce for which it is a new stock in trade; and it becomes a new source of wealth for the farmer because, as each product acquires value, he makes new consumption for himself.
>
> Thus it is that all farmers, merchants, artisans, come together to increase the mass of wealth.

Condillac concludes:

> It is therefore proved that in the final analysis industry is also a source of wealth. We shall expand on this matter some day soon. It has been much obscured by some writers.

No wonder he was not met with enthusiasm from among the ranks of mainstream economists of his day, who entertained precisely the erroneous notion that farming alone was the origin of all wealth.

In another brilliant insight about the workings of the market economy, Condillac rejected the conventional theory of the origin of money, arguing that money had emerged out of commodities like gold and silver, which had a large market and were therefore suitable to be "the common measure of all values" (p. 126).

Let us turn now to Condillac's sober and pitiless analysis of government interventionism, an excellent contribution even by modern standards. Again

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[4]The title of Chapter 6 (first part) reads "How Trade Increases the Mass of Wealth" (p. 99).

[5]The title of Chapter 24 (first part) reads "How Production Regulates Itself According to Consumption" (p. 176).

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and again, Condillac points out that these interventions create disorder. He criticizes the stupidity of glorifying war as productive of wealth (pp. 230f.), explains that government grows through its attempts to suppress the black markets it has itself created (pp. 233, 238), and anticipates the economics of the Laffer curve (p. 233). He also argues that professional associations, seeking government intervention in their favor, spur bureaucratization (pp. 235ff.), and in a pre-Rothbardian manner ridicules the distinction between (civil) human rights and (economic) property rights: "The rights of humanity opposed to those of property! What gibberish!" (p. 269).

A short passage in his chapter on government meddling with money shows that he anticipated to some extent the Misesian theory of the business cycle. Here he describes how a speculative frenzy, induced by coinage debasement ("reductions"), is entertained for a while through further debasement. The frenzy comes to a violent halt and a crisis breaks out when the king stops making payments, even in money that is further debased. States Condillac (p. 246):

> So people found it very easy to borrow. This ease deceived incautious merchants who thought they must seize this opportunity to form some new enterprises. They took this money that was offered them, and they bought, but dearly, either because their competing demands raised prices, or because they paid with money which, from one day to the next, was to fall in value.
>
> However, after several reductions, the king himself began to lock up the silver in his strongboxes. Payment at his treasury ceased. So mistrust was general and one saw no more silver in circulation. Merchants who had borrowed it did not have enough for everyday essential expenditure. Then, forced to empty their warehouses and to sell at a 50 or 60 per cent loss, they saw how they had been deceived in their speculations. The majority became bankrupt.

But the most astounding insight of Condillac's is his anticipation of the Misesian theory of interventionist dynamics, which he combines with a proto-economic calculation argument. Says Condillac (pp. 261f.):

> When trade is perfectly free, the quantity and the need are apparent in all the markets. Then goods put themselves at their true price, and plenty spreads equally everywhere. That is what we have proved sufficiently.
>
> But when one has once taken all freedom from trade, it is no longer possible to judge, either if there is really an imbalance between the quantity and the need, or what it is. If it were slight, it grows from day to day, through the people's fear and the monopolists' greed. Then circulation is constantly suspended by the obstacles it finds in its path; and it can happen that all the provinces have shortages at the same time, or at least that they experience scarcity one after the other.
>
> It is true that the government redoubled its efforts in these circumstances. But its operations, always slow, could not bring help equally everywhere, as a crowd of merchants spread out on every side would have been able to

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> do. Yet it found itself compelled to all the greater expenditure as the purchases on its behalf were made lavishly and sometimes dishonestly.
>
> It was making useless attempts to settle the disorders. Its first regulations had produced them: its last regulations were bound to perpetuate them, or even to make them grow more.
>
> It persuaded itself that the high price or dearth resulted from a residue of freedom. Consequently, *It was forbidden to all persons to undertake trade in grain without having obtained permission for it from officials appointed for that purpose.* [He goes through a list of other regulations, then concludes:]
>
> There you have what in an abuse of language was called *police regulations*, as if order could have emerged from the regulations.

These quotes should suffice as proof that *Commerce and Government* is an extremely important book in the Austrian tradition. Reason enough, I shall hope, for every Austrian economist to become acquainted with it. The book is essential reading for students of the history of economic thought, but it could also be used with great profit as a supplementary reading assignment in any course on the principles of economics. Condillac's work is a timeless classic. Its elegant prose and the axiomatic clarity of the argument still make it a great introduction to economics.

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POWER AND PROSPERITY. BY MANCUR OLSON. NEW YORK: BASIC BOOKS, 2000.

Mancur Olson, who taught economics at the University of Maryland before his untimely death in 1998, is best known for his 1965 work, *The Logic of Collective Action*, which was an outgrowth of his doctoral dissertation. *Power and Prosperity*, which Olson tentatively completed before he died, examines the age-old question of why some nations are poor and others are not and offers insights into the continuing transformation of the economies of former communist states as they struggle to establish a modified capitalist order.

I must confess to not having read *Logic*, so I am at a slight disadvantage in reviewing this work, as I would like to be able to see how Olson changed in his approach to economic analysis over the last three decades. Given that, I must also say that it seems obvious that *Power and Prosperity* is basically an unfinished work, or at least I perceive that it would have received more editing and rewriting had Olson remained alive.

That having been said, let me opine that *Power and Prosperity* is both frustrating and interesting. Let me first deal with my frustrations, the first one being that the book is not easy to follow. Olson's concepts are not difficult to understand, nor is *Power and Prosperity* particularly scholarly. Unfortunately, the book is not well written and is poorly organized, which is why it strikes me as an unfinished work. Even though *Power and Prosperity* is relatively short, Olson seems to ramble on with certain subjects, especially when he writes of "roving bandits" and "stationary bandits." He covers too many subjects and does not effectively tie them together.

On the other hand, I appreciate the fact that he attempts to construct *logical* rather than mathematical arguments, as seems to be the disease that has struck most of the economics profession at the present time. It is at this point that I begin my analysis of what Olson writes.

Power and Prosperity is an attempt to examine governance in the post-communist world. Socialism collapsed in the U.S.S.R. and Eastern Europe, while China moves forward toward becoming a modern capitalist society. Yet, a decade after the hammer and sickle and the red star was hauled down from thousands of flagpoles, the dream of capitalist prosperity to replace the "workers' paradise" has not materialized.

The former Soviet Union is a good example. While some signs of prosperity abound in cities like Moscow and St. Petersburg, parts of the country are economically worse off than they were under communism. Although the socialists that populate European, Canadian, and U.S. universities declare this situation to be "proof" that

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capitalism creates poverty, Olson rightly points out that much of the problem of transition has to do more with the existing institutions in that country as well as a system of perverse incentives.

> But in many large state-owned enterprises, there is a surprising and often intense opposition to privatization and economic reform generally. More often than not, if any mass privatization takes place, it is only privatization [such as in Russia] that gives the firms mainly to the insiders and [especially] the existing management, and leaves the same managers in power as before. (p. 160)

Olson goes on to explain much of the Russian opposition to privatization in public-choice terms, noting the effect of interest groups on the process. While he agrees that ideology might have something to do with the opposition to placing state-owned enterprises in private hands, Olson also agrees that many of these firms have become "sclerotic" under communism and that privatization would make much of the current management worse off than before.

He backs up that assertion by citing a study by Akerlof and others (1991) which looked at production in the former East Germany and found that only about 8 percent of East German workers actually produced something "whose value in international markets covered even the variable costs of producing these products" (p. 162). Olson says that since East Germany was "one of the most prosperous of the communist economies," things had to have been even worse in places like the former Soviet Union or Bulgaria.

An economy primarily made up of subsidized firms will drain any society and drag many people off into poverty. At the same time, the very fact that survival of these firms depends upon government largess creates a constituency that is dependent upon such handouts. It should be no surprise, then, that the communist system produced interest groups just as the "democratic" West has done.

In examining what is needed for a society to be prosperous, Olson correctly writes that having markets in and of themselves is not a prescription for ending poverty. He writes

> Those who live in low-income economies know that there are shops and market days in the villages, bazaars in the town, and peddlers hawking their wares on the street. The number of shops and peddlers in a large, poor city such as Calcutta is almost uncountable. The largest number of markets that I have ever seen in one place was in far-from-prosperous Moscow in early 1992, where there were people buying and selling at almost every metro stop and street corner. (p. 173)

Following in the vein of Hernando de Soto's *The Other Path: The Invisible Revolution in the Third World* (1989), (to which he refers), Olson writes that in many poor nations, not only is it difficult to delineate property rights, but many government interventions themselves make matters worse. He cites the difficulty many individuals have in obtaining and filing business permits, which leads many to operate in the illegal but economically necessary "informal sector."

Societies where people wish to have prosperity must have the following, he writes:

> To realize all the gains from trade, then, there has to be a legal system and political order that enforces contracts, protects property rights, carries out mortgage agreements, provides for limited liability corporations, and facilitates a lasting and widely used capital market that makes the investments and loans

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> more liquid than they would otherwise be. These arrangements must also be expected to last for some time. (p. 185)

He adds that prosperity is also dependent upon the availability of "a broad and secure set of individual rights" within a society, something that generally is not a characteristic of poor nations. To that, I and others who are fellow travelers of the Austrian School of economics would agree. Moreover, it is always encouraging when a mainstream economist is willing to make some of the same arguments for property rights that Austrians have made for about a century, but that have been ignored by the economics profession, for the most part.

However, such declarations hardly make this a profound work. As previously mentioned, Ludwig von Mises and Murray N. Rothbard have made far more compelling defenses of property rights and more insightful condemnations of government intervention than does Olson. Even when Olson makes a quasi-reference to the Austrians, citing the "knowledge problem," he fails to even mention that it came from F.A. Hayek. Furthermore, he seems to create a number of historical errors when he discusses the brutal collectivization and total state ownership of the economy of the Soviet Union under Josef Stalin.

In examining Stalin's schemes, Olson says that they were created in order to maximize production and tax revenues to the Soviet state. While it is true that industrial production increased in the U.S.S.R. during Stalin's realm, what Olson fails to point out is that much of the large-scale capital investment that was needed to perform this production increase came from the West. Instead, he makes it sound as though Russian economic growth of this period came from the genius of Stalin himself.

While *Power and Prosperity* does include a number of logical insights into rich and poor societies, there are a number of similar works that I believe are better and easier to follow. Although I am encouraged that a mainstream economist has included some Austrian ideas (though not giving Austrians credit), in the end I must conclude that this is a clever but flawed volume.

WILLIAM L. ANDERSON
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Alternative Route: Toward Efficient Urban Transportation. By Clifford Winston and Chad Shirley. Washington, D.C.: Brookings Institution Press, 1998.

This book is one of many recent works dealing with issues of transportation and the prospects for privatization. In particular, this volume emphasizes the losses and wastes generated by public intervention. Winston and Shirley give an overview of the present dismal situation (chap. 1). Public authorities manage most bus and railway companies, while those managed by private enterprise are hindered by subsidized and fixed fares and political pressure over the location of routes (chap. 2).

Public transport is indeed a socialized system that generates a great deal of inefficiencies (chap. 4). Government regulators, by subsidizing low user fares, extending route coverage, and increasing service frequency, are the real reason for wasteful public expenses and sporadic overutilization of resources (p. 78). These interventions reflect special-interest concerns even as local political authorities push for other policy priorities.

The authors argue that it is hugely difficult for regulators to administer a consistent transport policy. The problem of public management is too complicated: the price of fares, frequency of service, route coverage, and the density of the means of transport vary according to the importance some populations place on various policy goals (p. 81). Globally, the authors estimate, $6 billion are wasted each year to promote an inefficient policy in urban transit system.

The authors' proposed solutions are interesting but ultimately disappointing. Laudably, they do call for what they believe to be the privatization of urban transit. They call for an increase of fares, as well as reductions in the frequency of service and route coverage. They argue that with competition, the bus will replace the rail, and that automobile transportation will increase. New modes of transport would appear, they believe. They also propose a complete deregulation of the taxi market.

When it comes to political strategy, however, they blink. They argue that the privatization of roads, though necessary, is premature (p. 103). Waiting for the right time to privatize is the perfect bureaucratic excuse. Moreover, Winston and Shirley are confused about the meaning of privatization. They equate toll roads with private roads, for example. In fact, toll roads are public pieces of land, managed by pseudo-private companies, ultimately controlled by the State. Managers are only specific bureaucrats

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(Mises 1983). On the other hand, a private road can be free-access, or the owner can charge the price yielded by the interactions on the market.

In short, private roads without complete ownership of the land are not actually privatized (Rothbard 1983). Thus does the authors' use of the term "privatization" constitute a semantic abuse and a misinterpretation. The complete absence of reflection about this topic reflects the limits of the analysis. Indeed, it is meaningless to speak of the privatization of transport equipment but not land. Without private land, all aspects of transportation will be subject to manipulation and political influence. There is no way of knowing whether the structure of the industry will reflect the desires of consumers. Using an analogy, it would be as if we proposed competition among workers and managers even as firms continued to be owned by the State. We could suggest that the wage be fixed at its competitive level (of this particular market), but it is impossible to say that the allocation would be efficient among the different industries. Government alone could decide the level of production, and, hence, it is not obvious that the allocation of the workers would be the one yielded by a free market.

In reality, if regulators control infrastructure, tolls, and fares, they will manage the entire industry. The proposals of the authors are only a means of contracting out, of delegating, the management of some part of business. But ultimately, the government remains in charge. The damaging effect of such proposals is that they mislead people into believing that this constitutes true privatization, and, indeed, the authors believe that they are proposing complete privatization.

The authors' entire study rests on an empirical and econometric approach. They use an aggregate joint choice model (chap. 3). Their sample represents only 20 percent of the total trips (p. 31), but they assume it is representative of the other 80 percent. The authors recognize that their analysis is sensitive to this problem. Their predictions concerning the expected gains from the proposed reforms can vary from $15 billion to $8 billion.

More problematic is the inconsistency of their assumptions. Winston and Shirley try to show how roads can solve the problem of congestion, but they assume no relationship between income and travel time (pp. 35–36, n. 21). Obviously, this assumption is important. Even their results rely on this relationship, first on the speculative determination of the value of time between peak time and off-peak time, and second by the ratio between work trips and leisure trips (table 3.3, p. 43 and table 4.6, p. 63).

More interesting is Winston and Shirley's claim that they are able to define the optimal market share for different modes of transport (table 4.2, p. 58). They even claim that they can define the correct tolls for the use of roads, fares for bus and rail trips, frequency of service, and route coverage.

In undertaking these exercises, they suppose that they can do more than the market (table 6.1, p. 93). They claim that the so-called bus and rail privatization combined with optimal auto tolls could bring a net benefit of $10.8 billion. By using their econometric model (by which they determine fares for urban transit, tolls for roads, and the shares of different modes of transportation), they valued the gains to $11.5 billion. Their process of optimization shows higher gains. Consequently, Winston and Shirley are placed in an inconsistent position of defending privatization, while the solution amounts, not to privatization, but to control by a big centralized organization or a kind of Soviet plan. How can they conclude privatization is the solution while assuming that they already know the solution that the market would yield?

Moreover, the authors' estimates of optimal fares and prices rely on data derived from experiences in a hampered market. But these data reflect a particular historical

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state of the market, from which it is impossible to deduce the potential actions of a free market. The actions of the drivers and other users actually reflect only a situation characterized by different interventions, subsidies, and regulation. Consequently, there is no way of establishing a model with these data to predict evolutions for a world without these interventions. It is impossible, because these data are not available.

This volume tries to define an alternative route to the present hampered markets. This should be considered progress, even radical progress. The trouble is that the authors' solutions do not go far enough to address the most fundamental problem, and thus they cannot defend the transportation reforms we truly need.

LAURENT CARNIS
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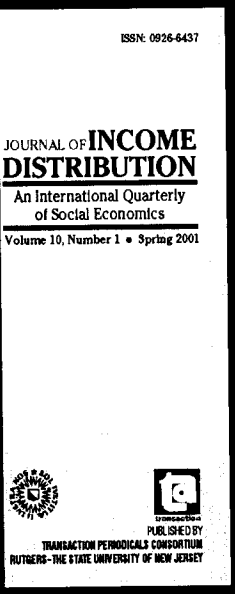
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